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A SHIPBOARD EPIDEMIC OF ASIAN INFLUENZA

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AN EPIDEMIC of Asian influenza occurred on the U. S. S. *Valcour* (AVP 55). The ship was relatively isolated from external contamination once the initial contact had been made and the progression of this disease in a susceptible military population could be studied with a minimum of outside influences. The clinical impressions that the disease progresses in severity during a pandemic[1] and that lack of sleep and physical fatigue correlate with severity and sequelae[2] were examined. The severity of the epidemic was compared to the 1918-1919 pandemic as it occurred in military groups.

EXPOSURE

On 27 and 28 June 1957, while returning from the Persian Gulf, the ship stopped at Aden, where there was an epidemic of Asian influenza. On 1 July the first case of influenza appeared among the crew. On the same day the ship met its relieving ship, the U. S. S. *Greenwich Bay* (AVP 41) from which 11 men were transferred to the *Valcour*. Between 2 and 3 July, the ship traversed the Suez Canal and did not make any new contacts until it reached Naples, Italy, on 7 July. There was no Asian influenza in Naples at that time. No new cases appeared after 10 July and all cases were discharged by 14 July.

DIAGNOSIS

An oral temperature of 102°F plus a history of chills, arthralgia, myalgia, and cough were criteria of admission into this

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study. Of the 201 men on the ship, 71 met all these criteria, yielding a total attack rate of 35.3 per cent. An additional 29 men exhibited symptoms and a temperature of over 99°F, which made it seem probable that they also had the infection. No attempt was made to check on the rest of the ship's company other than to make announcements in the Plan of the Day describing the prodromal symptoms and urging men with the symptoms to report to sick bay. The additional 29 men were those who felt ill enough to come to the sick bay of their own volition. With inclusion of these cases, the attack rate was 49.8 per cent.

The 71 cases in this series were graded as to severity. Mild cases were defined as those without marked symptoms other than fever, and with a duration of less than 4 days. Severe cases had more pronounced symptoms that lasted 5 to 8 days. Patients with secondary infections were those whose febrile course went from 101 or 102°F down to 99°F in 3 to 4 days and then, after 6 to 8 hours, returned to 102°F. These patients were given 500 mg of oxytetracycline four times a day, as soon as this febrile trend was established, the fever in all but one case returning to 99°F in a few hours. Abnormal pulmonary sounds were noted in all these cases.

Patients were discharged after 36 hours of normal temperature. Only 2 of the 71 patients suffered relapses. All cases cleared without sequelae except for some patients who were left with a cough that gradually disappeared.

Table 1 gives a breakdown of the attack rates by severity for the total epidemic, including the nonadmitted cases that were treated as outpatients.

TABLE 1. *Attack rate of Asian influenza in crew of 201, by severity*

Severity	Number	Per cent
Ambulatory	29	14.4
Mild	47	23.4
Severe	13	6.5
Antibiotics for secondary infection	11	5.5
Total	100	49.8

All patients were men 17 to 45 years old who met the physical standards for active duty in the Navy.

Four paired sera from patients admitted to sick bay were tested at Preventive Medicine Unit No. 2, Norfolk, Va., and two of the sera showed marked reactions in the specific hemagglutination-

inhibition test to the antigen of Far East isolate A/Japan/305/57, the Asian influenza virus.

Sera were also tested against influenza types A/PR8/34, A/FM1/50 (A/Denver/57), B/GL/54 and B/Lee/40. These sera showed no significant rise in titer. This result is considered definite evidence that the epidemic was the Asian type of influenza.

SYMPTOMS

In the majority of cases, the disease began either with coryza and a gradually increasing backache, or suddenly with a shaking chill. All cases developed a significant fever, 102°F or more, at some time during the disease. Table 2 presents a summary of the symptoms that were reported by the patients as most pronounced. Migratory arthralgia without overt arthritis was common,

TABLE 2. *Symptoms, signs, and severity of Asian influenza in patients placed in sick bay during first, middle, and last periods of epidemic*

Symptom, sign, or severity	Per cent of total group of 71 cases	Per cent of first 25 cases	Per cent of middle 21 cases	Per cent of last 25 cases
Headache	38	32	33	48
Arthralgia	34	20	33	48
Myalgia	49	56	48	44
Chills	49	48	38	60
Cough	37	36	48	28
Diarrhea	11	12	10	12
Asthenia	13	12	24	4
Sore throat	10	20	5	4
Rales, right lung base	34	16	38	48
Rales, left lung base	17	8	29	16
Mild infection	66	68	76	56
Severe infection	18	16	14	24
Antibiotics for Secondary infection	15	16	10	20

as was myalgia, which caused considerable discomfort. Some of the patients complained often of a severe backache at the base of the back. The cough tended to follow the rise in temperature by about 24 hours, and was associated with fine rales in less than half the cases. Asthenia, so common in pandemic influenza,[2] was of little importance in this epidemic. Rales tended to be found most often at the right lung base, and usually developed during

the second or third day of the infection. Sore throat, coupled with an "injected" pharynx, occurred frequently.

STATISTICS

In this paper the number in a category was compared to the expected value as predicted from the behavior of the total epidemic and tested by the chi-square technic. The expected value was derived as follows: If A was the value of a certain category in group n, and B the value of the same category in a larger group z, the expected value of B was equivalent to B times the total number of cases in group n divided by the total number of cases in group z. This expected value was then compared to A by the chi-square technic. Yates' correction was used where the number of cases was less than 5 and/or where the degrees of freedom were less than 3. For a difference to have been statistically significant in this study, it must have differed to the 1 per cent level of confidence.

PROGRESSION AND SEVERITY OF SYMPTOMS

To test whether the severity of the disease changed during the epidemic, the first 25 cases admitted between 1 and 5 July, the middle 21 cases, and the last 25 cases admitted after 6 July are compared in table 2. Testing each category of these three groups against the corresponding value as predicted from the total group showed no significant variation in the symptoms or severity during the course of the epidemic. The average initial temperature (101.9°F) and the average time spent on the sick list (2.9 days) also showed no significant variation between the three groups or from the total group.

Using the grades of severity outlined above and comparing the average maximum temperature for each group to that for the total epidemic, there was no significant relationship between severity of influenza and maximum temperature.

EFFECT OF BERTHING AND WORKING CONDITIONS

During the epidemic, the *Valcour* had a total complement of 13 officers, 7 chief petty officers, and 181 enlisted men. The men were classified into divisions by occupational and berthing assignments (fig. 1). After 2 July the "Flag" compartment was used as an isolation ward and the men were transferred to bunks in the V and X division compartment. The divisions followed standard Navy designators. The men who transferred from the U. S. S. *Greenwich Bay* were put with the V and X division. The M division contained the ship's engineers. All of these men slept in the same compartment and all but the shipfitters worked in close association in the engine rooms. First division personnel worked about the deck and were less confined during the working day. Personnel of divisions V, X, O, N, and F, the stewards, the

chiefs, and the officers were in smaller groups, had more sedentary jobs, and were dispersed about the ship. Each compartment had a separate air-conditioning system.

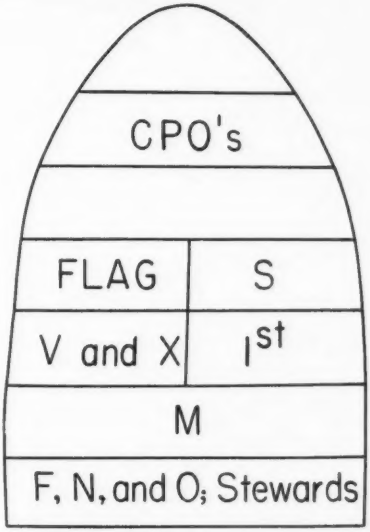

Figure 1. Berthing diagram of the U. S. S. Valcour, *by divisions.*

Statistically there was no significant difference between the number of men infected from each division and the number that would be expected as predicted from the total group (table 3). The distribution of severity of the infection in each division of the ship as compared to that expected from the total number of that severity reduced proportionately, also was not significant by the chi-square test (table 4).

TABLE 3. *Incidence of influenza by divisions*

Division	Number of men	Number infected	Number expected from total
M	58	22	20.5*
S	30	7	10.6
First	31	14	11
O, N, F, stewards	43	17	15
V, X, transfers	19	7	7
chiefs, officers	20	4	7
Total	201	71	71

*Calculated as follows: 201: 71:: 58: 20.5

TABLE 4. *Severity of influenza by divisions*

Division	Total number infected	Number with mild infection	Number expected to have mild infection	Number with severe infection	Number expected to have severe infection	Number receiving antibiotics for secondary infection	Number expected to require antibiotics for secondary infection
M	22	14	14.6*	3	4.0	5	3.4
S	7	7	4.6	0	1.3	0	1.1
First	14	9	9.3	4	2.6	1	2.1
O, N, F, stewards	17	8	11.3	5	3.1	4	2.6
V, X, and transfers	7	6	4.6	1	1.3	0	1.1
Chiefs and officers	4	3	2.6	0	1.1	1	0.6
Total	71	14	47	13	13	11	11

*Calculated as follows: 71: 47:: 22: 14.6

INCIDENCE BY DAYS

Figure 2 indicates the number of men of each group who were disabled each day. The striking onset in M division on 4 July correlated with the long watch and the rapid change in temperature while traversing the Suez Canal. The men repeatedly went from the hot engine room to the cooler deck to see the canal. While on deck they stripped to get a sun tan and were chilled by the deceivingly cool breeze. The ease of droplet spread and greater virus stability in the hot, moist engine room might also have explained this sudden onset.[3]

CONTROL

Because of the cramped shipboard berthing quarters and the nature of the ship's air conditioning system, it was impossible to isolate patients at less than the division level. As soon as cases were detected they were isolated in a separate compartment, but with a "head" common to the rest of the crew. This appeared to have little effect on the spread of the disease. The incubation period seemed to be about 48 hours, during which time the only symptom was a nonspecific coryza. Using the chi-square test, neither the attack rate nor the daily incidence rate of those who were not exposed at Aden differ significantly from the rates of those who were exposed in Aden.

COMPARISON WITH THE 1918-1919 PANDEMIC

The epidemic of influenza observed by Opie and associates[4] in 1918 at Camp Pike occurred in a relatively isolated military population much like that involved in the present study. The 100 consecutive cases reported from the height of the 1918 epidemic

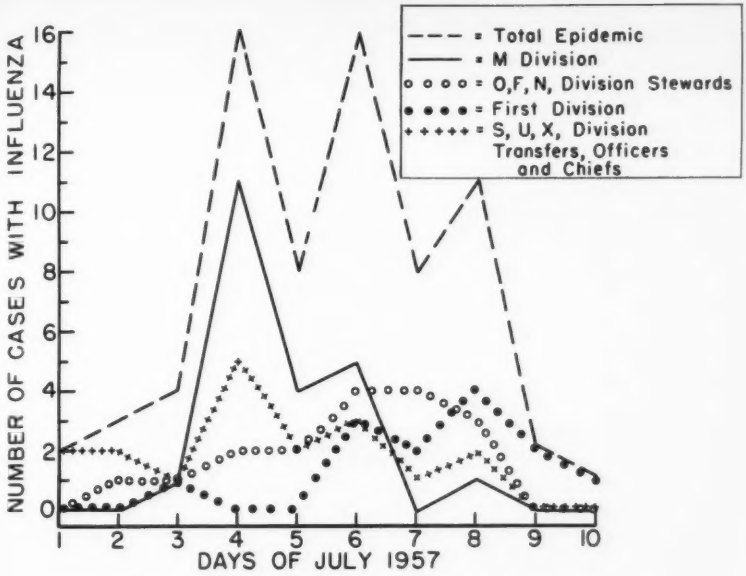
NUMBER OF CASES WITH INFLUENZA
DAYS OF JULY 1957
= Total Epidemic
= M Division
= O,F,N, Division Stewards
= First Division
= S, U, X, Division Transfers, Officers and Chiefs

Figure 2. Daily incidence of epidemic, by divisions.

were similar to the 71 observed in 1957, with minor exceptions. Epistaxis, which was not seen in the 1957 series, occurred 12 times in the 1918 group. On the other hand asthenia and diarrhea were significantly more prominent in the current series.

Dudley[2] reported 368 cases seen on the hospital ship H. M. S. *Agadir* in the late fall and winter of 1918 to 1919. The pandemic reportedly was more severe as it progressed and, in addition, the series seen on a hospital ship presumably would have been weighted toward the more severe cases. About 6 per cent of the 368 patients died of pneumonia, whereas there were no deaths in the current series. There also was a longer duration of fever in uncomplicated cases of the *Agadir* group. This is shown in figure 3, in which the duration of fever is plotted against that for corresponding groups in the other two series. Fevers recurring after 48 hours of normal temperature were not included.

It can be seen from table 5 that the range of severity and complicating pneumonitis in patients seen in 1957 was similar to that in the 1918 to 1919 reports, with the exception that no deaths occurred.

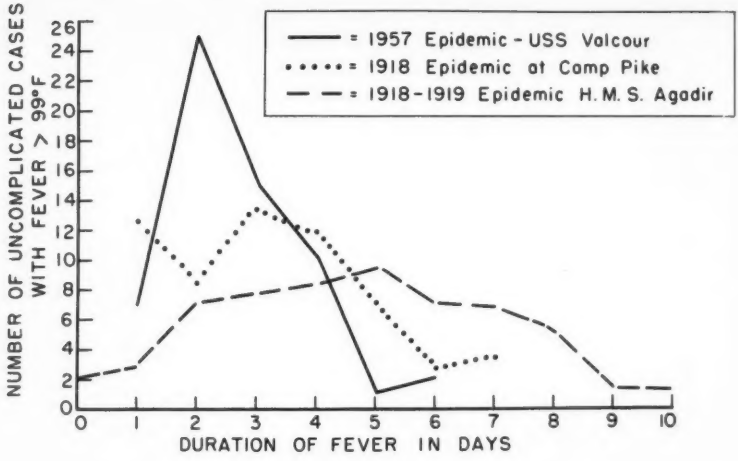

Figure 3. Comparison of duration of fever in uncomplicated influenza in the 1957 and the 1918-1919 epidemics.

TABLE 5. *Comparison of severity of 1957 epidemic and 1918-1919 pandemic*

Severity	Valcour (1957) 71 cases		Opie et al.[4] (1918) 100 cases		Dudley (1919) 368 cases	
	Number	Per cent	Number	Per cent	Number	Per cent
Uncomplicated	47	66	64	64	285	77
Cases with pulmonary signs	24	34	36	36	-	-
Pneumonitis with fever	11	15	15	15	83	23

COMMENTS

It appears that either repeated chilling and heating and loss of sleep, or the working conditions of the engineering division, could make the infection spread more rapidly. There was no evidence that the infection which appeared more quickly in this way was any more severe or led to more sequelae. The officers, who were better isolated, suffered a specific attack rate not significantly different from the crew. Face masks were not used. The disease could be controlled adequately with symptomatic therapy, and antibiotics were used only when pneumonitis appeared as a complication, following partial recovery. The predominance of pulmonary rales in the right base as compared to those in the left base was not significant.

The 1957 epidemic here reported, when compared to two studies on similar populations during the 1918-1919 pandemic, showed striking similarities in symptomatology and severity. The only important differences lay in the prevention of secondary pneumonia with antibiotics, and in the fact that no deaths occurred. The deaths in the *Agadir* 1918 to 1919 series were caused by pneumonia.

In the course of the epidemic, all three of the Medical Department representatives on the ship became infected. This relatively mild infection disabled a considerable portion of the ship's company; if it had been more virulent it could have disabled the entire ship and rendered it ineffective as a fighting unit.

SUMMARY

An epidemic of Asian influenza aboard a relatively isolated naval ship disabled 35.3 per cent of the ship's company for varying lengths of time over a period of 14 days. The natural history of the epidemic in this closed environment was examined statistically. There was no evidence that the epidemic changed progressively in severity or that the amount and type of physical labor affected its severity or over-all incidence. There was evidence that either repeated chilling or confinement in a warm, moist environment could cause the infection to spread more rapidly, but the infection thus spread was not more virulent. A comparison with two studies of the 1918-1919 pandemic in similar military populations showed no significant difference in severity. Control measures were not effective and the infection proved to be a grave military hazard.

ACKNOWLEDGMENT: The author wishes to thank Lieutenant R. D. Alexander, MSC, USN, and Lieutenant (jg) W. R. Sanborn, MSC, USN, of Preventive Medicine Unit No. 2, Naval Operations Base, Norfolk, Va., for their help in identifying the virus.

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USE OF THE BATROW NEUROMUSCULAR STIMULATOR FOR INDUCING RESPIRATION IN GB-POISONED ANIMALS

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SEVERAL methods of artificial respiration have been found effective in resuscitating GB*-poisoned animals. Oberst and associates[1] found no appreciable difference between the effectiveness of the mask-to-mask and the tracheal-tube methods of artificial respiration in resuscitating dogs exposed by inhalation to 3 to 40 lethal doses of GB vapor.

In recent years several electric stimulators have appeared on the market, each having characteristics supposedly useful in inducing artificial respiration. Sarnoff, Hardenbergh, and Whittenberger[2] described an apparatus** capable of producing artificial respiration by electric stimulation of one or both phrenic nerves. The stimulus is a series of impulses, the voltage of which rises and falls in such a way as to produce effective diaphragmatic contraction and relaxation. Sarnoff, Hardenbergh, and Whittenberger[3,4] reported that effective respiratory activity could be induced, and that the technic was capable of maintaining normal partial pressures of oxygen and carbon dioxide in the arterial blood of experimental animals and in man, in the absence of spontaneous respiration. In unpublished experiments carried out by Wills and his associates[5] this type of stimulator did not produce effective artificial respiration in dogs poisoned with lethal doses of GB.

The Batrow neuromuscular stimulator*** is another type of electric stimulator that generates a current effective in producing muscular contraction. Essentially it consists of a generator capable of delivering from 17 to 20 microamperes at 25,000 to 60,000 volts in a series of highly damped 7-microsecond oscillations.

From Toxicology Division, Chemical Warfare Laboratories, U. S. Army Chemical Center, Md.

*Nerve gas with the chemical name of isopropylmethylphosphonofluoridate.

**The Sarnoff Electrophrenic Stimulator is manufactured by Sanborn Co., Cambridge, Mass.

***Made by Batrow Laboratories, Branford, Conn.

This apparatus has been proposed for treatment of certain types of neuromuscular dysfunctions. The manufacturer also has suggested its use for resuscitating drowning and smoke victims by stimulation of the diaphragmatic muscles.

In our studies the Batrow neuromuscular stimulator was tested for its effectiveness in resuscitating dogs and Rhesus monkeys poisoned by inhalation of lethal concentrations of GB vapor.

METHODS AND MATERIALS

Six dogs, each weighing approximately 10 kg, were shaved in the abdominothoracic area where the stimulating electrode (applicator) was to be placed, and an area on the back also was shaved for placing the return plate (ground). To ensure good electric contact, both the stimulating electrode and the return plate were wrapped in a cloth dampened with tap water. A tracheal tube with a Sanders cuff was inserted into each dog. The tube was connected by a 2-way valve and short rubber tubing to a small Collins gasometer equipped with a pen and kymograph for recording air movements. For dogs, a surge setting of 5, a pulse setting of 3, and an intensity setting of 8 on the apparatus appeared to give the best physical response of the chest wall and diaphragm, but other settings were also tried.

Rhesus monkeys weighing from 3 to 6 kg were not shaved for placement of the electrodes, but the instrument settings used were similar to those for the dog.

In preliminary tests, 3 of the 6 dogs were used to test the action of the stimulator on respiration at various instrument settings and positions of the stimulating electrode. These animals also served as controls for dogs exposed by inhalation to GB vapor. One of the control dogs received Nembutal (brand of pentobarbital sodium); one, curare; and another, a combination of these drugs. All GB-exposed dogs and monkeys, except one, received atropine (5 mg per kg of body weight for the dog, and 2 mg per kg for the monkey) intramuscularly one-half to three minutes after the one-minute inhalation exposure. One monkey did not receive atropine.

RESULTS

Dogs. Alterations in the respiratory rate and volume due to electric stimulation were studied on the nembutalized dog. Subjective observations on this animal indicated that the tidal volume was not altered appreciably; however, at increased intensities the rate of respiration was synchronized with the rate setting on the instrument. Another animal received sufficient curare to inhibit respiration completely. The electrostimulator caused marked, spastic-like chest movements but did not move an appreciable amount of air as observed by the recordings on the kymograph.

The dog showed marked signs of anoxia and was dead 5 to 6 minutes after the curare injection.

On the basis of the foregoing results, a third animal was first given Nembutal, and then curare was administered intravenously in dosages which lowered the respiratory rate and volume. Application of electrostimulation did not increase the tidal volume, but the frequency of respiratory activity could be controlled by the pulse setting on the instrument. The same results were noted after additional administration of curare, which caused a further lowering of respiratory rate and volume. When sufficient curare was administered to inhibit respiration completely, the electrostimulator caused muscular contractions that appeared spastic in nature, but little or no respiratory ventilation occurred. The animal became hypoxic and would have died under these conditions of treatment. When death was imminent, the operator disconnected the tracheal tube from the spirometer and connected it to a mechanical resuscitator. In a short time the color of the tongue and mouth changed from dark blue to pink, indicating effective pulmonary ventilation. After a few minutes, the method of respiration was changed to the electrostimulator, and the same condition of anoxia occurred as before and the animal was again on the verge of death. Once more, mechanical respiration was effective in relieving the animal's anoxic condition.

Three dogs were exposed to GB vapor, equivalent to approximately 3 LCt50's* (187 mg min/m^3). After the exposure, they were treated with atropine, followed immediately by electrostimulation. In the first animal, atropine was administered and electrostimulation was initiated three minutes after exposure. Spontaneous respiration had ceased by this time. Electrostimulation caused vigorous muscular action synchronous with the rate set on the instrument, but did not move an appreciable amount of air as recorded on the kymograph. The dog did not show signs of spontaneous respiration and was dead within three to four minutes after resuscitation was initiated. In previous experiments on dogs similarly poisoned with GB, a mechanical respirator saved the animals. Because treatment in the foregoing animal was not started until respiration had ceased, the experiment was repeated on a second animal, except that treatment was started one-half minute after the exposure and while spontaneous respiration was still in effect. The outcome was as unsuccessful as before. When spontaneous respiration ceased, the electrostimulation did not produce adequate respiration. In the third dog, treated one-half minute after exposure to GB vapor, electrostimulation failed to maintain adequate ventilation. When anoxia became severe and the animal appeared to be dying, the tracheal tube leading to the

*LCt50 = the product of vapor concentration and time of exposure resulting in 50 per cent lethality. —*Editor.*

spirometer was disconnected. One of us ventilated the dog by blowing through the tube into the dog's lungs. Within a minute, color improved, and within another two minutes respiration became spontaneous. There is no question but that the animal would have died under electrostimulation.

Rhesus Monkeys. The results in five rhesus monkeys tested are shown in table 1; all except one received atropine. Electrostimulation was started at approximately the same time as the atropine administration. The results show that the electrostimulator was not effective. The only monkey that survived never stopped breathing and received atropine early, one-half minute after the exposure.

TABLE 1. *Evaluation of the Batrow neuromuscular stimulator in rhesus monkeys poisoned with GB**

Subject	Time for appearance of toxic signs (in minutes)		Time of atropine administration (in minutes)	Initiation of electrostimulation (in minutes)	Approximate time of death** (in minutes)
	Tremors	Convulsions			
1	0.5	-	None	0.5	6
2	-	None	0.5	0.5	Survived
3	-	1.7	1.7	2.0	10
4	-	1.5	1.0	0.5	12
5	0.2	-	0.3	0.5	5

*The times recorded in the table commence at the end of the 1-minute exposure.
**Cardiac arrest.

There is no doubt from past experience that all the atropinized animals would have survived, if effective artificial respiration had been employed. In the animal receiving no atropine, life could have been supported for a considerable time by means of a good mechanical respirator.

DISCUSSION

While the Batrow neuromuscular stimulator may be very useful for stimulation of muscles, it is not an effective device for artificial respiration. It did not produce the necessary alternations between the inspiratory and expiratory muscles which are essential for adequate ventilation. The inspiratory muscle effects that resulted from stimulation with the applicator placed over the diaphragm were probably counteracted by the simultaneous stimulation of the expiratory muscles. When the intensity was set high enough to give strong contractions, contractions were of a spastic nature. Regardless of whether curare or GB poisoning caused the neuromuscular block, as studied here, the resuscitator was unable to overcome the block.

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SUMMARY

The Batrow neuromuscular stimulator in conjuction with atropine therapy was evaluated as an electric resuscitator in dogs and monkeys poisoned with lethal amounts of GB vapor. Two curarized dogs also were used in these experiments. The stimulator was ineffective in resuscitating these animals. It caused spastic-like contraction of the respiratory muscles, but did not cause respiratory exchange adequate for survival.

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CHRONIC FEARFULNESS

"Everyone recognizes that there are diseases of the body and diseases of the mind. Many thoughtful people believe that there are also diseases of the spirit, important in themselves and capable of producing pronounced secondary disorders of body and mind. Spiritual disorders include pride, jealousy, greed, self-pity, resentment, self-indulgence, and chronic fearfulness. As an example of the latter I may tell you of an eminent surgeon who had a patient with a dangerous and painful illness requiring an operation involving serious risk. She showed great courage and endurance, in contrast to her husband, who was a worrying little man, fussy over trifles and consumed by fearfulness. Many times during those difficult weeks he telephoned or visited the surgeon about trivialities. Eventually the patient reached a stage of convalescence. One day, again by special appointment, the husband came to the surgeon and asked, 'Mr. Jones, do you think I ought to get a bath-chair?' The harassed surgeon answered crisply, 'You can if you like, but I don't think she's strong enough yet to push you around.'"

—R. W. LUXTON, M. D.
in *British Medical Journal*
p. 546, Sept. 7, 1957.

INFERIOR DEEP CERVICAL LYMPH NODE BIOPSY

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IN 1949 Daniels[1] described a method of biopsy useful in diagnosing certain intrathoracic diseases. He reported five cases. Since then several large series of cases substantiating the usefulness of the procedure have been reported.[2-4] As a result of these reports this operation gained wide acceptance until it became apparent that it produced large numbers of false negatives results. Because of this, the procedure has now fallen into some disrepute. The purpose of this article is to discuss some of the causes for the inaccurate results, and to emphasize some important points designed to improve the diagnostic accuracy of this operation.

Names such as supraclavicular fat pad biopsy, retroclavian lymph node biopsy, and prescalene lymph node biopsy have been applied to this procedure. It is thought, however, that none of these adequately describe the location of the lymph nodes to be excised. The lymph nodes alluded to lie on the anterior scalene muscle and around the junction of the subclavian and internal jugular veins. These nodes have always been called the inferior deep cervical lymph nodes,[5,6] and although the other titles may have brevity to commend them, this advantage is lost by their clouded anatomic connotation. Because of the use of the above vague and varied terminology, the exact material to be excised has frequently been overlooked. Often, as illustrated in our series of 74 consecutive cases, no lymph nodes were found in the specimen (table 1). Twenty-five and sixth tenths per cent contained no material of value in diagnosing spread of intrathoracic disease. Most of the biopsies in this series were performed by junior house officers. A 2- to 4-cm incision was made, and the entire operation took about one-half hour to complete.

Emphasis must be placed on the fact that many different surgeons, primarily first- and second-year residents, performed the

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TABLE 1. *Diagnostic biopsy of inferior deep cervical lymph node in 74 consecutive patients*

Final diagnosis	Number	Node biopsy		
		Negative (number)	Positive	
			Number	Per cent
Sarcoid	22	16	6	27.2
Carcinoma	18	14	4	22.2
Mediastinal tumor	5	5	0	0
Inflammation	11	11	0	0
Tuberculosis	5	4	1	20.0
Lymphoma	3	1	2	66.6
Carcinoma esophagus	1	1	0	0
Miscellaneous	9	9	0	0
Total	74	61	13	

Biopsy of no value in diagnosis 61
Biopsy obviated necessity of operation 13
Clinically enlarged nodes with positive biopsy 6
- Carcinoma 3
- Lymphoma 2
- Sarcoid 1

Impalpable or occult nodes with positive biopsy ..... 7 = 10.3 per cent
- Carcinoma 1
- Sarcoid 5
- Tuberculosis 1

Biopsy negative but positive tissue diagnosis made 39
- Thoracotomy 32
- Bronchoscopy 4
- Papanicolaou smear 2
- Autopsy 1

Biopsies containing no lymph nodes 12
Biopsies containing lymphoid aggregates only ..... 7 } 25.6 per cent

Final diagnosis confirmed by lymph node biopsy 13

Total number of cases studied 74

surgical procedure on this group of patients. The method of biopsy used was that described by Daniels.

The failures, of course, cannot be ascribed to lack of clear description of the operative technic, inasmuch as this has been adequately accomplished by several writers. Rather, we believe that the failure lies primarily in the fact that this procedure is thought of as a simple, 10-minute operation without mortality or morbidity. Accordingly, the most junior member of the sur-

gical staff has been assigned to delve among the great vessels at the base of the neck and extract the fat pad lying on the anterior scalene muscle, hoping thereby to remove some or all of the inferior deep cervical lymph nodes. This, as is amply illustrated by our series of patients does not produce the desired diagnostic results. In our opinion it requires a 5- to 6-cm incision for adequate exposure, and about one hour of a trained surgeon's time to safely extract the elusive, deep-lying lymph nodes from their hiding places about the subclavian and internal jugular veins. The surgeon, in addition, must be interested in and aware of the problems inherent in this procedure. Obviously enlarged and palpable lymph nodes at the base of the neck in the subclavian triangle present no major surgical problem, and the incidence of positive results under these circumstances is very high indeed. It is the occult, small, impalpable node that escapes our eye and finger, and for which we must diligently search if we are to improve our diagnostic aliblity and thereby prevent needless surgery of benign and/or inoperable malignant lesions. In our series only 10.3 per cent of occult nodes were positive.

Selection of the side of operation also plays an important role to increase diagnostic accuracy. As emphasized by Harken and associates[7] and Connar,[8] the description of the lymphatic drainage of the lung by Rouviere,[9] indicates that the right lung and the lower two thirds of the left lung drain eventually to the right inferior deep cervical and mediastinal lymph nodes; whereas the upper one third of the left lung only drains to the left side of the mediastinum and neck. This finding, naturally, locates the side of incision. However, the finding of negative lymph nodes in an adequate, right, deep cervical lymph node biopsy, performed for a lesion in the lower two thirds of the left lung, probably should indicate the need for biopsy on the opposite side. One patient in the series reported had a left lower lobe lesion. A left, inferior deep cervical lymph node biopsy was performed with positive results.

Cervicomediastinal biopsy, as advocated by Harken and associates, has not as yet won general approval; however, it may eventually be the procedure of choice. Connar reported an incidence of 31 per cent positive inferior deep cervical lymph node without mediastinal biopsy in cases with a proven diagnosis of carcinoma of the lung. This latter figure, when examined, reveals that it includes six cases of palpable nodes and thus, if it is to be compared with that of Harken and associates (39.8 per cent), must exclude those cases, giving a true incidence of 26 per cent positive biopsies. This may represent a significant difference between these two procedures. Those figures reported by Shefts, Terrill, and Swindell[4] do not state if nodes were palpable and thus cannot be readily compared. However, it is interesting to note that their incidence of positive biopsies was lower than that

reported by Harken and associates. Even with the high incidence of positive biopsies using the method advocated by Harken and associates, the increased discomfort the patient experiences, plus the possibility of damage to the great vessels, makes one slow to accept such a procedure.

Finally, routine inferior deep cervical lymph node biopsy is not indicated in all pulmonary lesions. Only those lesions showing a high incidence of positive lymph nodes in the operative specimen should be included.

These collected cases (listed in table 2) indicate there is little value in biopsy when a mediastinal tumor, carcinoma of the esophagus, or intrathoracic metastasis is suspected. In addition, a hilar or pulmonary lesion suspected as being tuberculous seems to give few positive results. Table 2 also indicates that there is a rather wide range of positive results reported from different institutions, and that therefore defects in technic or ability to find pathologic nodes must exist.

The figures shown in table 3 indicate the per cent of the final diagnosis (established by all methods) that was made by inferior deep cervical lymph node biopsy. Some of the authors quoted this percentage figure on only one diagnosis, and consequently the total cases indicated are those relative to that diagnosis alone.[4,7,10]

It is to be noted that a number of patient's reported on by Carstensen, Norviit, and Odelberg[10] had clinically palpable nodes, and Shefts, Terrill, and Swindell did not indicate if the nodes found in the patients were palpable preoperatively. This, of course, may account for the high range of diagnostic accuracy reported in their studies. The problem most commonly encountered is that of a pulmonary or mediastinal lesion without palpable inferior deep cervical lymphadenopathy, and this therefore should be the test for procedure accuracy.

SUMMARY

In a series of 74 consecutive cases of inferior deep cervical lymph node biopsy, it is emphasized that this is not a minor surgical procedure to be delegated to the most junior member of the surgical staff. In this series of cases the operation was performed by different physicians, ranging from intern to fully trained surgeon. Most of the procedures were performed by first- and second-year residents. The selection of the side of operation, based on the lymphatic drainage of the lungs, is an important facet in increasing the diagnostic accuracy of the procedure. Not all pulmonary lesions yield a high incidence of positive inferior cervical lymph node biopsy. The most important criterion in evaluating this procedure is its incidence of positive lymph

TABLE 2. *Summary of diagnoses in collected series of inferior deep cervical lymph node biopsy*

Author	Number	Sarcoid	Carcinoma	Tuberculosis	Fungus diseases	Mediastinal tumor	Lymphoma	Carcinoma of esophagus	Miscellaneous	Intrathoracic metastases	Positive biopsy diagnosis	
											Number	Per cent
Jay and Hewlett	74	6	4	1	-	-	2	-	-	-	13	17.5
Piper[11]	185	31	10	3	3	-	4	-	-	1	52	28.1
Cuykendall[2]	41	4	3	-	-	-	1	-	-	-	8	19.5
Harken and associates[7]	142	7	31	2	-	-	2	2	1	-	45	31.7
Connar[8]	50	4	9	-	-	-	1	-	-	-	14	28.0
Shefts and associates[4]	187	38	13	8	1	-	4	-	-	3	67	35.7
Carstensen and associates[10]	56	31	-	3	-	-	-	-	2	-	36	64.2

TABLE 3. *Accuracy of inferior deep cervical lymph node biopsy expressed as per cent positive biopsy*

Author	Number of cases	Per cent positive				
		Sarcoid	Carcinoma	Tuberculosis	Mediastinal tumor	Lymphoma
Harken and associates[7]	78	-	39.8	-	-	-
Connar[8]	50	80.0	31.0	-	-	100.0
Cuykendall[2]	41	100.0	21.4	-	-	100.0
Jay and Hewlett	74	27.2	22.2	20.0	-	66.6
Carstensen and associates[10]	46	66.0	-	-	-	-
Shefts and associates[4]	24	-	54.00	-	-	-

nodes in the face of clinically impalpable inferior deep cervical nodes.

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FORENSIC PSYCHIATRY IN THE ARMED FORCES

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DURING the past few years there has been an increasing interest in the problems of forensic psychiatry. Recent books by Zilboorg,[1] Overholser,[2] Biggs,[3] and Weihofen[4] not only pointed up the old problems, such as the basic relationship between psychiatry and law, but raised many new questions. Although these problems have been explored extensively in civilian courts, little attention has been paid to them as they exist in the armed services.

The psychiatrist entering military life may wonder what is the military law in cases where insanity is a defense, and also what restrictions there will be, if any, on his psychiatric formulations based on his training and life experiences and evaluation of the patient, if asked to testify in a military court. It was my experience while in military service that most psychiatrists who first came into service believed that military life in itself was almost synonymous with some restrictions on their professional thinking and expression. This of course is not so; in fact, a careful review of recent cases shows that military courts are increasingly interested in psychiatric testimony and want more rather than less information.

This article will highlight four recent decisions, all of which have the common feature of emphasizing the importance of psychiatric testimony in the military court and the belief of the judges on the Court of Military Appeals, the highest legal tribunal in the military, that meaningful, dynamic psychiatry has an important place in the military courtroom.

The basic law of mental responsibility in the military is found in the *Manual for Courts-Martial,* and is as follows:

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A person is not mentally responsible in a criminal sense for an offense unless he was, at the time, so far free from mental defect, disease, or derangement as to be able concerning the particular act charged both to distinguish right from wrong and to adhere to the right.[5] The phrase "mental defect, disease, or derangement" comprehends those irrational states of mind that are the result of deterioration, destruction, or malfunction of the mental, as distinguished from the moral, faculties.

To constitute lack of mental responsibility, the impairment must not only be the result of mental defect, disease, or derangement, but must also completely deprive the accused of his ability to distinguish right from wrong or to adhere to the right as to the act charged. Thus a mere defect of character, will power, or behavior, as manifested by one or more offenses, ungovernable passion, or otherwise, does not necessarily indicate insanity, even though it may demonstrate a diminution or impairment in ability to adhere to the right in respect to the act charged. Similarly, mental disease, as such, does not always amount to mental irresponsibility. For example, if a person commits an assault under psychotic delusion with a view to redressing or revenging some supposed injury to his reputation, he is nevertheless mentally responsible if he knew at the time that the act was contrary to law, and if he was not acting under an irresistible impulse. On the other hand, an accused is not responsible for a particular homicide if, as a result of mental disease, he had an insane delusion that another person was in the act of attempting to kill him and he thereupon killed the supposed attacker under the delusion that it was necessary to kill the deceased to preserve his own life.[5]

Irresistible impulse as a defense also is permissible. The Durham rule has not been accepted. This rule, which the Court of Appeals, District of Columbia, unanimously adopted to replace the M'Naghten test and the irresistible impulse test for mental responsibility, was: "It is simply that an accused is not criminally responsible if his unlawful act was the product of mental disease or mental defect."[6] The court correctly indicated that the fundamental objection to the right-wrong test was not that criminal irresponsibility was made to rest upon an inadequate, invalid, or indeterminable symptom or manifestation, but that it is made to rest upon any particular symptom.

> In attempting to define insanity in terms of a symptom, the courts have assumed an impossible role, not merely one for which they have no special competence . . . . In this field of law as in others, the fact finder should be free to consider all information advanced by relevant scientific disciplines.[6]

In two cases, United States versus Smith,[7] and United States versus Kunak,[8] the judges, in particular Judge Paul W. Brosman and Judge George W. Latimer, did refer to this new rule, but

considered that only Congress had the authority to make such change and only by legislation.

The psychiatrist in the service also could refer to TM 8-240.[9] This was the manual that in many cases caused the belief among psychiatrists that their testimony had to be restricted and that dynamic factors were not to be emphasized. This manual, called Psychiatry in Military Law, clearly attempted to define psychiatric illness for the military:

> This manual defines and explains the legal standards applied in military law to determine whether a person was mentally responsible at the time of the offense and has the requisite mental capacity to be tried by court-martial. Since a diagnosis of a particular psychiatric disorder viewed in the light of these legal standards may result in a determination that the individual is or is not criminally accountable, certain psychiatric disorders are discussed with reference to their legal effect. . . When reporting on such a case or testifying at a court-martial the medical officer should not indulge in *philosophic, dynamic explanation** of the mechanisms involved. . . It should be pointed out that while character and behavior disorders are diseases of the "mind," for the purposes of technical medical classification military law views them as defects of moral character, not mental disorders. For forensic purpose, this (and not the technical medical nomenclature) must be the medical officer's yardstick.[9]

The four cases, United States versus Smith,[7] United States versus Kunak,[8] United States versus Dunnahoe,[10] and the United States versus Covert,[11] will now be briefly reviewed and the important legal comments noted.

Mrs. Smith was found guilty of stabbing her husband to death in Japan. Two boards of medical officers were held prior to and after trial, which found her sane. Their diagnoses were:

> 1. Emotional instability reaction, chronic, severe, manifested by extreme emotional outbursts and suicidal and homicidal manifestations. Predisposition, severe (numerous previous hospitalizations for similar disorder); stress, minimal (recent arrival in the Far East Command); incapacity, minimal. 2. Intoxication, drug, barbiturate and paraldehyde. . . . 3. Addiction, drug, (barbiturate).[7]

The accused claimed a defense of insanity, based on the testimony given by Brigadier General Rawley E. Chambers, who stated that Mrs. Smith had been his patient at various times between 1948 and 1951. He believed, chiefly on the basis of her history while his patient, "that Mrs. Smith—while able to distinguish right from wrong—could not adhere to the right at the

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*Italics supplied.

time of the offense." He had considered the accused "... an anxiety neurosis, but as the picture began to unfold, it is a long-standing pattern and continual struggle with these various episodes, and the final diagnosis, as I recall, was emotional instability reaction with barbiturate addiction."[7]

Since the diagnosis of emotional instability is a character disorder, and not a recognized military mental disorder, the defense of irresistible impulse was not allowed.

Following her conviction, Mrs. Smith was examined by expert civilian consultants, one in psychiatry and one in clinical psychology. They were Dr. Alexander Simon and Dr. Douglas M. Kelley. These consultants concluded that at the time of the offense the accused was not able to distinguish right from wrong or to adhere to the right. This led Chief Judge Quinn, who dissented in the case, to state:

> The medical officers who have examined Mrs. Smith and whose names will be signed to these findings, function in a somewhat differently structured medico-legal context than their civilian colleagues who have also examined the accused. By this, it is inferred that the military psychiatrist's latitude is in effect, somewhat diminished as to what findings he may make by the established body of medico-legal policy and precedent now codified in part in TM 8-240. It is the impression of the undersigned that in a civilian jurisdiction a much more liberal interpretation of issues of mental responsibility in crimes of violence is frequently observed. These statements are made in an attempt to explain some of the differences of opinion as to the accused's responsibility expressed by military and civilian psychiatrists.[7]

In the case of the United States versus Kunak,[8] the defense was entirely that of insanity. Kunak was charged with the murder of 2nd Lt. Harold B. Williamson. He had been seen approaching the table where Lt. Williamson was seated. He then executed a right face, lifted a carbine and shot Lt. Williamson. Previous history revealed that Kunak had a half-brother and a sister in mental institutions. As a civilian Kunak had jumped from a 75-foot bridge, and on occasion had attempted to balance himself on his head while riding a motorcycle at a high rate of speed.

There were at least two military sanity boards, one before and one after trial. They both found the defendant sane at the time of the alleged offense. The second sanity board was held at Fitzsimons Army Hospital in Denver, Colo. The findings of this board were to the effect that while ". . . the accused was suffering from emotional instability, he was sane at the time the offense was committed, at the time of trial, and at the time he

was examined."[8] The conviction was upheld, but before the case went to the Court of Military Appeals the parties entered into a stipulation that further action should be suspended in order that Dr. Manfred S. Guttmacher be allowed to examine the accused. His report, as reported in the Court of Military Appeals' decision,[8] was as follows:

> In this Examiner's opinion this patient is a paranoid schizophrenic. It is his definite opinion that this patient was not a legally responsible agent at the time of his offense and that he is insane now. It is his belief that the patient was suffering from a psychotic irresistible impulse at the time of the crime and that he did not have a full appreciation of the wrongfulness of his acts.
>
> In reviewing this whole situation longitudinally, it seems difficult to understand how a psychiatrist could come to any other conclusion in this case. He does not impress the Examiner as one of those borderline psychotics, but rather as a flagrant one.[8]

In this case the restrictive effect of TM 8-240 were also discussed, although it was more definitely criticized in the Covert case.[11] In the Kunak case Judge Quinn noted that this type of technical manual "circumscribes the testimonial freedom" of the military expert witness.

In United States versus Dunnahoe,[10] the problem of character disorders as related to the capacity to premeditate was a prominent issue. The charge was homicide. Dunnahoe, a soldier stationed in Germany, had spent the greater part of one July afternoon in 1954 "in gasthauses near the Schleiessheim Forest, Munich, Germany, where he reputedly consumed several beers. Sometime during that afternoon he entered the Forest and his asserted reason was that he intended to locate a prostitute. However, before finding a woman, he changed his mind and decided to return to the city. It was on his return journey that he first saw the decedent," a German national who lived with his parents in the immediate vicinity. After pausing to talk briefly with the boy, the accused continued on his way, "but observed that the boy followed." Then, according to the accused, the boy "started grinning like he was making fun of me or something." This angered the accused, and he struck the boy, knocking him to the ground. "The boy tried to escape but was again caught. The accused later explained, 'I might as well hit him a couple of more times. I would get just as much punishment as if I only hit him once.' At this point and without reason or excuse the accused killed the boy by means of a pocket knife" and mutilated the body.[10]

When apprehended, the accused signed two pre-trial statements. "The first statement indicated that he had killed the

victim under the delusion that the object he was stabbing was, in fact, a bear and that the body was mutilated in an attempt to prevent the meat from acquiring a 'rank' or 'odorly' taste."

Dunnahoe was diagnosed as a character and behavior disorder —in particular, aggressive reaction. He was tried and found guilty and sentenced to death. When the case was argued before the Court of Military Appeals the defense maintained that although the accused was legally sane, a character disorder should be considered as to the capacity of the accused to premeditate in regard to his alleged offense, and that in this case it had not been considered. The court agreed with him.

From the psychiatric point of view this was important, because it meant that now the courts would have to enlarge their inquiry in cases of this type from just the old "able to distinguish right from wrong" rule (M'Naghten rule), to an inquiry into the patient's mental status at the time the act was committed. As the court noted:

> We know of no good reason why military law should not embrace principles which keep the courts-martial abreast of medical science, particularly when the military medical service advances compelling reasons for their adoption . . . . Certainly, the state of mind with which a person commits a criminal act is material in determining whether he should be punished therefor, and, if so, how severely.[10]

The court continued:

> Expert witnesses are seldom asked to express an opinion except on legal insanity, and we believe the cavalier treatment accorded the subject of diminution of capacity, which we find in many records, is not in keeping with the consideration given to the subject of insanity by the military services . . . . we conclude that character disorders as defined in the military medical manuals and regulations should be considered in measuring a person's mental ability to premeditate.[10]

In the final case to be presented, United States versus Covert[11] a number of different points were emphasized, all tending to free the psychiatrist from restrictive regulations. The accused had killed her husband, an acknowledged drunkard. He had been in frequent financial trouble and had spent most of his wife's accumulated savings of more than $5,000.00 before re-entering military service in 1946.

They were stationed in England, when the wife received word that she was about to inherit a sizable sum of money. Shewanted to save it, but her husband wanted to buy a car and tour the continent. She thought that her husband was more and more like her father, who had been resentful of the fact that she had not been

a boy and who had gone so far as to attempt to throw her out of a window on one occasion, and on another to choke her.

Mrs. Covert became depressed and sought medical attention at the Air Force hospital. She was seen by a psychiatrist, who was impressed by her agitation and depression and considered immediate hospitalization, but decided against it at that time in view of the limited medical facilities and what he deemed the absence of urgency. He gave her another appointment to return the next day.

The accused returned home, and was described by a neighbor as being in good spirits. She did not have any arguments with her husband that evening, but after he retired she killed him while he slept with an ax. Later she could not offer any reason for the act. She removed her flannel pajamas which, being covered with blood, she placed in a washtub. She then covered her dead husband, took a heavy dose of drugs, and went to sleep in the same bed with the body of her husband.

The next day she appeared for her 2 p.m. appointment with the psychiatrist. He asked about the state of her health and she commented that it was "not so good." Then with no sort of preface she stated in an unemotional and dull monotone: "I killed Eddie last night."

The psychiatrist considered that she had been psychotically depressed and was not sane at the time of the alleged offense. Further, she had told him (she was an unreconstructed Southerner) that even the presence of General Sherman would not have prevented her from killing her spouse. Three other psychiatrists who examined her believed that she was seriously ill, but sane.

Mrs. Covert was convicted. After the trial, two of the psychiatrists submitted voluntary statements to the effect that they had believed they were bound by provisions of TM 8-240, which restricted their professional opinions. When the defense argued the case before the Court of Military Appeals it was pointed out that the psychiatrists had too literally applied the "policeman at the elbow test"* when the question of irresistible impulse had been raised. The Court of Military Appeals agreed that this had in effect been the case. They reversed the conviction and ordered a new trial.

Chief Judge Quinn stated:

In the *Smith* case, I noted that the military medical experts were obviously testifying to what they believed the service manuals required "to the exclusion of their individual beliefs." This case confirms my

*This phrase does not appear in the 1953 revision of TM 8-240—*Editor.*

fear that use of the technical manuals on psychiatry are depriving the accused of the right to unbiased and truly professional opinions from military psychiatrists.

I am glad Judge Brosman has recognized the improper influence of the technical manual in this case, and I concur with him in setting aside the conviction and ordering a rehearing. At the same time, I cannot refrain from expressing regret that he has not joined me in a general condemnation of the present use of the service manuals as a restrictive influence on the testimonial freedom of the service doctors.[11]

In summary, what has been the over-all effect of these cases in military law, and why are they so important to the service psychiatrist? It is my opinion that the psychiatrist has been freed from restrictive regulations and has been given the freedom to testify freely and fully and in his own dynamic language as to his findings. Furthermore, it behooves the military courts to listen to his findings, if they are to function properly and intelligently, as the judges on the Court of Military Appeals have stated over and over again. Meaningful psychiatry can now enter the military courtroom.

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A TECHNIC FOR MILITARY DELINQUENCY MANAGEMENT

II. Methods and Results*

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THE WORKING OUT and establishment of a program designed to avert difficulties previously encountered in a post stockade and in prisons at large and to retain control of the situation in the hands of the administration requires mutual respect, understanding, support, and co-operation from the post commander and his staff, the confinement officer and his staff, and the psychiatrist and his staff.[36] Without this, no such program could be successful. The program described appears to involve the following factors.

COMMAND RESPONSIBILITIES

When the Rehabilitation Company was first established, nearly all of its members promptly went AWOL (absent without leave). This was blamed upon faulty screening technics, but whatever the reason, the AWOL rate of this group (the mass of whom are confined because of AWOL) has, since that time, been generally lower than that of the post at large. Periods of many months have passed without an AWOL. A three-day home parole has been given both Christmases and only one prisoner has violated it. A program like this requires, then, one undeniable consideration: The command must be interested enough to tolerate some early growing pains and must recognize that such incidents are only outstanding examples of the renowned tendency of prisoners to test the limits —to see how far they can go. Everyone must be willing to take a chance and to recognize that some problem will arise. To operate the stockade in such a way as to avoid problems decreases opportunities for rehabilitation.

The program described here could not possibly have succeeded without the wholehearted and willing acceptance of the post commander, who encouraged its originators. All the levels of command and the staff sections involved were able to recognize that results could not be a great deal worse than they once were. Thus

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they have been willing to assume the necessary degree of responsibility to allow their psychiatrist and their confinement officer to exercise their best judgment in the interest of improvement.* Such trust and support frequently paid off only in the long run and, like the early AWOL incident, did poorly on a short time basis.

Additionally, the commander must be willing to listen seriously to the psychiatrist's recommendations for elimination of an individual from the service. He must differentiate between the practical possibility of training an individual and his responsibility to do so. He must be able to assume that the recommendations of the psychiatrist and of the confinement officer are mature and valuable, recognizing that these are the only members of his command who have been able to talk to and observe this individual well enough to have a real and objective basis for arriving at any conclusion whatever.

RESPONSIBILITIES OF THE STOCKADE

The custodial personnel must exercise mature judgment and practice penology at its highest level. They must attempt to suppress their tendency to become angry with the prisoners. Frequently they must defend their program to others who do not recognize its value. Particularly they must be mature enough to avert the repeated efforts of persons who, for lack of understanding, wish to "put some real punishment into that place." Efforts to secure the labor of prisoners to clear the streets, to rake leaves, or to do more than their fair share of the post's menial tasks must be critically examined. The confinement officer must be aware of and prepared to defend the bases for denying such efforts at any time the major and overriding aims of the program might thus be sacrificed. Many critics will remember a day when prisoners were used in a variety of very convenient ways. These memories, however, are also of a day when the social pressures upon the military establishment were quite different from those of the present, and when the average soldier was differently motivated than is today's soldier.

The confinement officer must recognize that essential to his behavior is the championing of the nondelinquent patterns of the prisoner. He is not only the prisoner's custodian, he is also his spokesman. The prisoner must be aware of this continuously if the custodial personnel are to retain control. To the degree he can, the confinement officer must protect his charges from loss of dignity and individuality while demanding discipline. He will get the latter if he gives the former. Prisoners will tell one, for

*The program was instituted at a period when Major General John W. Harmony commanded; Colonel Edward P. Thomson, Inf., was Chief of Staff; Colonel Richard Cameron, MC, was Post Psychiatrist; Lieutenant Colonel Alvin B. Welsh, MPC, was Provost Marshal; and Lieutenant Colonel Edward L. Ramsey, Inf., was Confinement Officer.

example, that they are at their most undignified and at their angriest when walking about the post under guard. Securing authorization for a bus to transport them may lead to a great deal more rehabilitation than hours of lecture or pious "understanding."

The stockade officer must be the kind of person in whom the prisoner can confide. He will get his best ideas from prisoners, and he must give of his maturity in return. This may be demonstrated in a compassionate and understanding attitude toward the prisoner's problem or in more or less concrete ways. The average prisoner is frightened when he leaves the stockade, whatever his destination. A few words of advice or encouragement may be of crucial value at such a time. The confinement officer must recognize, for example, that upon return to duty after months in confinement, the average soldier needs to have some free time. Arrangements to have the commander of the new unit talk to the prisoner and encouraging that officer to give the ex-prisoner an immediate pass are valuable technics. Some ex-prisoners will not return from such a pass, but a good many more will go AWOL if no pass is given. Only the confinement officer is likely to have the experience to realize this.

Finally, the stockade officer must enter into a co-operative relationship with the psychiatrist. It is most important that he recognize that he and the psychiatrist have different areas of responsibility and that the psychiatrist, too, can be wrong. When a problem that appears to have psychiatric implications arises, it is essential that the confinement officer and the psychiatrist develop a mutually agreed to procedure, and the confinement officer must carry out his portion willingly. If it is decided that a given suicidal gesture, for example, would be best handled by ignoring it, he must be willing to do so. Although the psychiatrist functions only as his advisor, the confinement officer must recognize that psychiatric findings and recommendations are technical suggestions that are perhaps best judged by a trial. Restraint in classifying a matter as a medical rather than a custodial problem is of importance. Declaring a problem to be an emergency must be done conservatively and must be on reasonable grounds. The question is not, for example, just that a given prisoner is having a temper tantrum but rather whether such a tantrum appears to be unusual. The doctor may have less skill in handling a simply angry man than does an experienced guard.

In general, the confinement officer must look upon his work as that of custody, classification, rehabilitation, and disposition of prisoners. The maturity to obtain the co-operation of command and the willingness to work co-operatively with the psychiatrist are essential in the program described.

RESPONSIBILITIES OF THE MENTAL HYGIENE SERVICE

This service must recognize that a substantial amount of its responsibility lies within the stockade. It must accept the presuppositions upon which stockades are operated and attempt to accomplish its end within that framework. Doing the actual work within the stockade is not only easier and more economical administratively, but it places the Mental Hygiene Consultation Service (MCHS) staff in the position of an insider in immediate and operating contact with stockade problems rather than remaining an esoteric, overcritical outside agency.

It must be kept clearly in mind that the delinquent is a special type of personality. In most of his work, the psychiatrist is able to place high reliance upon the spoken word of his patients. This is not true with the prison group, and unless he keeps this in mind he will find himself the victim of the prisoners rather than their therapist. He must guard against any tendency he has to become the champion of individuals, to expect guards to behave very differently, or to look upon the behavior encountered as a legitimate response to forces within the military about which, perhaps, he as an individual has problems. Such reactions can only lead to his being victimized and to his opinion being rejected as unrealiable. He is dealing with psychologic forces and phenomena far more fundamental than those of the middle-class group with which he is accustomed to deal, and he must learn to talk the language. Prisoners are quick to recognize assumed tolerance, overinterest, or fake attitudes, but they are more likely to understand if they are spoken to in their own idiom. They are not the average psychotherapy case.

The Mental Hygiene Consultation Service staff must also recognize that a prison is a place in which society imposes control upon persons who will not or cannot control themselves. Regardless of psychiatric opinions, a degree of punishment continues to be a part of the system. This leads to anxiety, depression, rebelliousness, and recalcitrance among many of the prisoners, and these are the natural consequences of imprisonment. The psychiatrist can rarely do much about it except to exert himself toward helping the prisoner avoid future repetition. He must also recognize that early experiences in a stockade are certain to give rise to adaptational anxiety which will, in time, be resolved. He must be aware of the normal cause of such anxiety in order to know what to expect, lest his overconcern lead him to imply that he can do more to manipulate the prisoner's situation than lies within his purview. He must differentiate between his entirely theoretical notions about delinquency and the contributions he can realistically make within the structure of the system as it exists. If he wishes to initiate changes in the system, there

may be possibilities to do so via his position as a staff officer, but at any given moment he must operate within the limits of the realistically available. If he becomes too academic or unrealistically theoretical, he may be of no value to anyone.

It is necessary that he recognize that his recommendations must be based upon considerations other than his own prejudices or caprices. If he recommends separation of an individual, the commander must be provided with information upon which the action could, in each case, be justified to reviewing authorities. His unsupported opinion may be of interest, but it is not a basis for action. Although his primary duty is toward his patient, it sometimes happens that the needs of the Army and of the individual are so at odds that, if they cannot be resolved by changing the the patient, the only practicable answer is discharge. The psychiatrist must be guided by the principle that a person who cannot be relied upon to do his share of the work is of no value to the Army as an employee, the social or psychiatric needs of the individual notwithstanding.

He must categorize his function carefully, remembering that certain opinions he has are based not on special skills he has as a psychiatrist but rather upon his common sense as an adult. Such items are not within the limits of his expertness. For example, he should not allow compassionate considerations to influence his psychiatric recommendations. Although he may feel that a prisoner's statement that he must be home with his ill mother is reasonable, this is not a psychiatric consideration. As a psychiatrist, he should only note the statement and attempt to show the prisoner that AWOL is a short-term and not particularly effective way of helping one's mother. The decision about what action is to be taken must be left to the commander. Although it is within his purview and perhaps responsibility to bring the matter to the attention of command, there are administrative policies and technics for handling such matters and they do not require medical interference. To allow one's humanitarianism to contaminate one's staff relationships can only lead to casting doubt upon the more purely professional functions that do legitimately belong to a psychiatric facility.

The psychiatrist must co-operate with and respect the custodial staff. His visits to the stockade must be at frequent enough intervals so that the normal prisoner is handled in a routine manner. This policy should avert the mass of emergency referrals. On the other hand, if the stockade officer believes that a problem is an emergency, the psychiatrist must be available to see the prisoner immediately. The physician will be surprised, if he utilizes this principle, to discover that more frequently than not an experienced guard is correct if he calls a prisoner psychotic. If the psychiatrist cannot be depended upon, the custodial person-

nel will have to "cover themselves" by more liberal declaration of states of emergency. He must recognize that although he gives orders in a hospital, he makes suggestions under these circumstances. Sometimes, because of factors beyond his knowledge and control, these suggestions cannot be honored. Nevertheless, he must work co-operatively with the confinement officer and must attempt to arrive at mutually satisfactory methods of operation.

A smoothly functioning routine is an essential to this program. It may, more effectively than any other influence, make it evident that this anxiety, that reality need, or this depression are expectable and ponderable. A variety of technics will be used to attempt to get around the routine. If at all possible, these should be discouraged. The prisoner who appears without an appointment, the prisoner referred by the dispensary physician, the prisoner who makes a request to see a particular person at MHCS are all suspect. In the main, such a person is seeking a special handling one cannot really give him. These individuals should be turned away and required to follow the usual procedure. This is, of course, possible only if they would be seen in the normal course of events.

The major area in which the routine can be defeated is sick call. Physicians will persist in wishing to treat the normal anxiety of the prison population. Consequently, the dispensary physician should be encouraged to send such patients away with instructions to await their normal and routine interview. If the liaison with the custodial staff is proper, that staff should not have to send prisoners to sick call for purely psychiatric reasons. In his search for special handling, however, the prisoner will quickly sense and exploit a way to circumvent the system, frequently as part of an effort to defeat the administration.

In practical fact, the mass of the work done in the program is done by social workers. They interview all new prisoners after trial and make an effort to interpret the prisoner's behavior to him. Reality problems such as concern for family, allotments, and other such matters are also gone into. The interview is brief, but in it the social worker attempts to get the prisoner to examine his own behavior and search for its causes. He also indicates interest and acceptance. The most important function of the interview, however, is to lay the groundwork for the remainder of the program. This interchange between prisoner and social worker provides an experience in which acceptance is offered and an opportunity for coming to terms with the administration is provided. The prisoner's conforming attitudes and behaviors are emphasized. The prisoner is shown that lack of social conformity has been of little value to him, but the essence is that such antisocial attitudes are, in this interview as they are in other contacts with the administration, simply not the basis on which transactions are allowed

to take place. The social worker may see a prisoner a second or third time but, in any event, he does not recommend appearance before the Classification Board until there is a marked evidence of change in attitude. A similar change must occur before clemency is recommended. If there is no change, the social worker may make no recommendation whatever.

When and if a person has had three courts-martial or if he is a psychotic, a homosexual, an alcoholic, or a drug addict, he is referred on to a psychiatrist. The psychiatrist hospitalizes the psychotic, who then becomes a medical disposition problem. The psychiatrist recommends all others for appearance before a board of officers convened under the provisions of appropriate regulations,[25,26] and makes findings and recommendations for use by that board. In custodial problem cases, he recommends that early action be taken, but allows all others to complete their sentence without interference.

The social worker also sits as a member of both the Classification Board and the Clemency Board. Beyond this, the MHCS staff performs only those services at the stockade that are requested, attempting not to interfere with its routine. Although the stark and unhappy stories told to the social worker are frequently fabrications, great care is taken to assure that the individuals doing this work do not become cynical. Any reasonably believable story is checked by requesting a home conditions report from the American Red Cross. Such information is not only of value to the psychiatric staff, but also may be helpful to the commander in arriving at administrative decisions.

Finally, the MHCS must recognize that although much that goes on partakes of psychiatric considerations, it by no means follows that the MHCS always has a contribution to make, to say nothing of a solution to offer. When this becomes evident, such contributions as may be appropriate are made, and the staff carefully withdraws from the situation. While no one proposes that modern systems of justice are perfect, psychiatry has not yet reached the point of having a really better answer to some problems.

TECHNIC OF OPERATION

Twice weekly, the confinement officer prepares a list of the newly sentenced prisoners in the stockade. This is forwarded to the MHCS through the appropriate personnel section which adds essential data such as the number of courts-martial, the commander's opinion, et cetera. A social work officer has two periods of consultation a week at the stockade during which he sees every person so listed. He investigates the background of the case, discusses it with the commanding officers where indicated, and makes a report to the stockade commander. Individuals referred on to the psychiatrist are seen routinely the following week during

one of two regularly scheduled periods for psychiatric consultation, also held at the stockade. There is liberal, informal consultation with the confinement officer and the decisions arrived at, although a part of the psychiatrist's report, are usually the concurring opinion of the psychiatrist and the confinement officer. During these periods, the psychiatrist also examines any person or group referred by custodial personnel, does pretrial sanity determinations on the request of The Judge Advocate General (the number of persons being tried is such that routine pretrial evaluation is impossible), and sees persons referred by the dispensary, The Inspector General or the Special Inquiries Section of The Adjutant General.

In situations in which the recommendation is for clemency, transfer to the rehabilitation company, or special work assignments and limitations, or when it is upon other matters that constitute recommendations to the confinement officer, the final report is provided to the confinement officer and is used by the various boards. The confinement officer and the psychiatrist work together particularly closely in arriving at technics for handling persons given to hysterical fainting, paralysis, vomiting, and other evidence of individual rejection of or failure to adapt to the confinement situation. Similarly they work out procedural technics for dealing with cliques, "kangaroo courts," and tantrums of various types.

In cases where elimination from the service is recommended, the report is provided to Post Investigations where it is heard immediately if such is the recommendation, or it is placed in a suspense file to be heard at such a time as to assure that the individual will not return to an active-duty status. All reviewing agencies expedite their handling in order not to impede the orderly flow of the process. Table 1 provides data concerning the characteristics of a sample of 500 cases seen by the MHCS at Fort Dix, N. J.

EFFECT OF THE PROGRAM

Criteria of efficacy in any rehabilitative procedure are difficult to establish. In the case of the rehabilitation of delinquents, the problem is made to appear even more bleak by the modesty of results under the best of circumstances. There are, however, indexes available for the evaluation of an over-all stockade operation, and such data are presented here. It is impossible to establish which of these effects can be ascribed to the psychiatric program *per se*. A tendency exists to overevaluate the psychiatric contributions and to underrate the value of custodial staff attitudes, the availability of work programs, and staff and command co-operation. There is probably an even more significant tendency to fail to recognize the importance of co-operation and mutual respect among these agencies. Although the custodial personnel

TABLE NO. 1

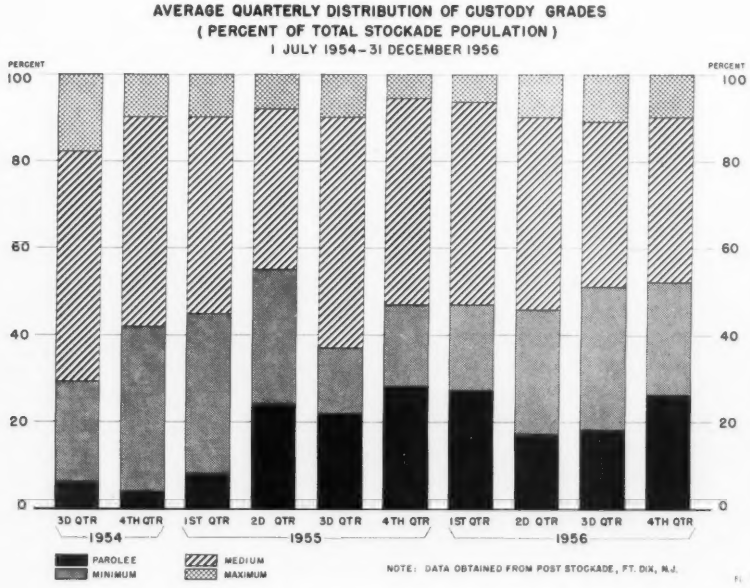
NATURE OF THE STOCKADE POPULATION. RECOMMENDATIONS AND DISPOSITIONS ACCOMPLISHED

Sample = 500*

| | | |

the relationship between the custodial personnel and the prisoners is such that work programs will be participated in by the prisoners with sufficient willingness so as to be efficacious.

Figure 1 indicates the proportionate distribution of classes of custody. It is to be noted that before the program was inaugurated nearly 20 per cent of the prisoners were in maximum custody and fewer than 10 per cent were on parolee status. About 70 per cent were in medium or maximum custody, seemingly indicating marked dependence upon area restraint. After the program was put into



operation, maximum custody fell as low as 5 per cent and never rose above about 10 per cent. Maximum plus medium custody accounted for 50 per cent or less of the population during most of the reported period. Parolee status was awarded to from 20 to 25 per cent of the population, while during most of the period minimum custody plus parole accounted for about one half of the population. In general, the data seem to indicate a substantial diminution in the use of area restraint.

The question arises as to whether this easing of restraint led to an increase in restiveness. Sick call represents one traditional way of expressing dissatisfaction. The sick call rate at a post stockade is usually considerably greater than in the post at large. Figure 2 indicates that starting with a rate more than seven times

that of the post, there has been a general diminution to less than five times the general rate.

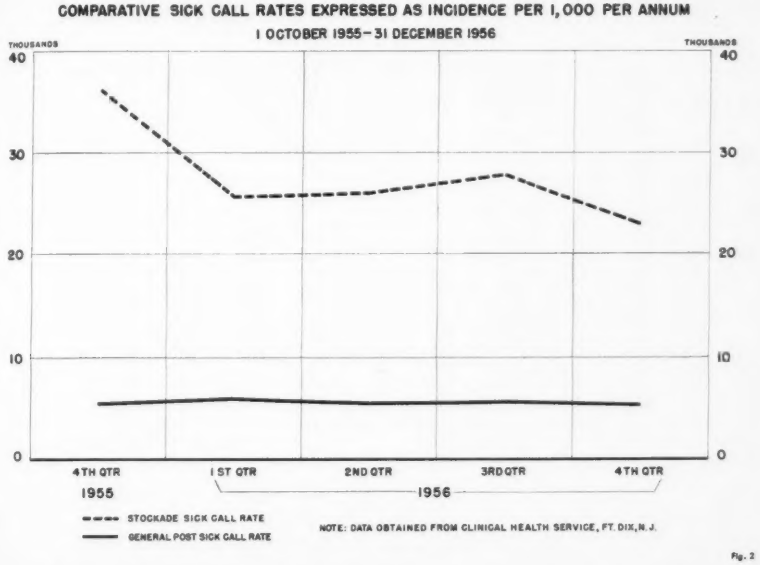


Fig. 2

Such restiveness and resistance to the general discipline of the stockade might be expected to manifest itself in an increased number of disciplinary actions within the stockade itself. Figure 3 indicates the marked diminution in the use of both disciplinary segregation and court-martial. These measures have been regarded by the custodial personnel as much less necessary.

The incidence of escape from either the stockade proper or the rehabilitation company does not lend itself to graphic representation. In general, however, escape from the post stockade has remained relatively constant in spite of the diminution of "custody grade consciousness." The rate approximates or is lower than the post AWOL rate. The small size of the rehabilitation company is such that one elopement produces a gigantic value when expressed as a rate per thousand per annum. Since the early incident of almost total elopement, as long as 9 months has elapsed without an escape, and during the remaining period one or two prisoners are the maximum to escape during any quarter. This is in spite of the Christmas home parole policy described.

Criteria of Psychiatric Results

Psychiatric results have been even more difficult to evaluate. Obviously, with a program of this sort, the neuropsychiatric incidence rate, if measured by the number of cases opened, approach-

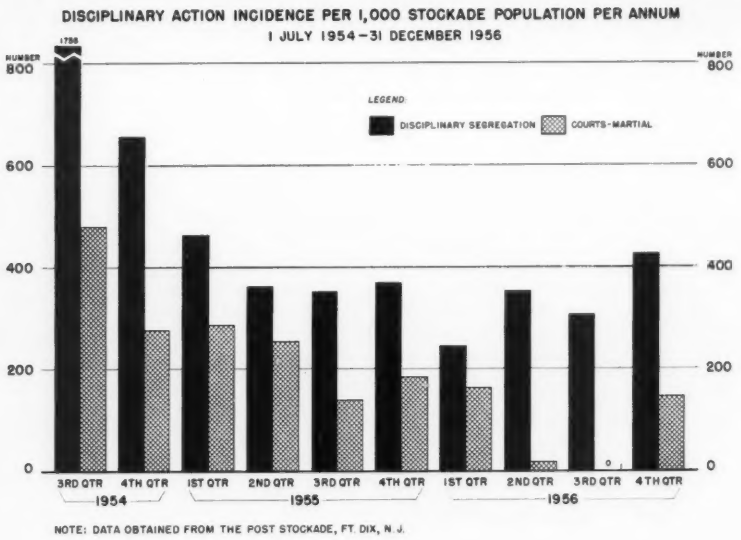
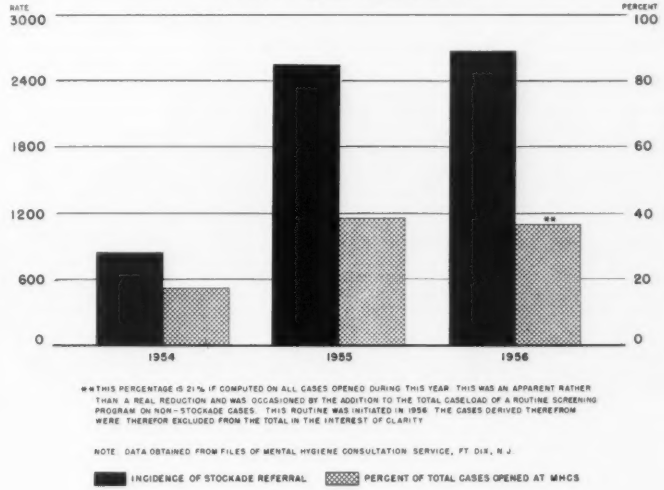


Fig. 3

es 100 per cent. The referral rate has never actually reached 100 per cent, however. This is because individuals awaiting appearance before a general court-martial are seen only on the request of the Office of the Judge Advocate General. Also, during this period, personnel of the overseas replacement pipeline were seen only on specific Command referral. The incidence of referrals to MHCS from the stockade, expressed as the rate per 1,000 per annum, before and after initiation of this co-ordinated program, is compared in figure 4. The percentage of total MHCS cases opened that were generated in the stockade is also indicated. It can be seen that the number of cases opened has about doubled. It is believed, however, that the amount of time and effort expended on referrals from the stockade has remained about the same. Such a co-ordinated program makes it so much easier to achieve results that more can be done for more people at less expense in time and effort. The types of cases encountered show only the expectable preponderance of antisocial types of character disorder. The incidence of psychosis and of other psychologically determined symptoms is not significantly different than the incidence elsewhere on the post. Transfers to the rehabilitation company have never been made in large numbers. The census of that operation has remained more or less constant at about one tenth of the total population. This is reflected in figure 5. The percentage of these known to be nonrecidivists on a 90-day follow-up is reflected in the broken line.

REFERRAL OF STOCKADE PRISONERS TO MENTAL HYGIENE CONSULTATION SERVICE
RATE EXPRESSED AS INCIDENCE PER 1,000 PER ANNUM
PERCENTAGE OF TOTAL MHCS CASES DERIVED FROM THE STOCKADE
1 JANUARY 1954-31 DECEMBER 1956



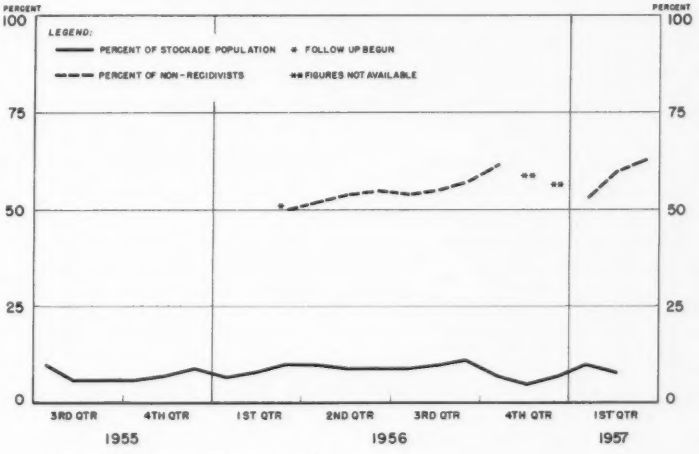
**THIS PERCENTAGE IS 21% IF COMPUTED ON ALL CASES OPENED DURING THIS YEAR. THIS WAS AN APPARENT RATHER THAN A REAL REDUCTION AND WAS OCCASIONED BY THE ADDITION TO THE TOTAL CASELOAD OF A ROUTINE SCREENING PROGRAM ON NON-STOCKADE CASES. THIS ROUTINE WAS INITIATED IN 1956. THE CASES DERIVED THEREFROM WERE THEREFOR EXCLUDED FROM THE TOTAL IN THE INTEREST OF CLARITY.

NOTE: DATA OBTAINED FROM FILES OF MENTAL HYGIENE CONSULTATION SERVICE, FT. DIX, N.J.

INCIDENCE OF STOCKADE REFERRAL PERCENT OF TOTAL CASES OPENED AT MHCS

Fig. 4

CENSUS OF REHABILITATION COMPANY EXPRESSED AS A PERCENTAGE OF THE TOTAL STOCKADE POPULATION. PERCENTAGE OF KNOWN NON-RECIDIVISTS AT NINETY (90) FOLLOWING RESTORATION TO DUTY FROM THE REHABILITATION COMPANY.



NOTE: DATA OBTAINED FROM POST STOCKADE, FT. DIX, N.J.

Fig. 5

A study of the results of the rehabilitation program as measured by the reported opinions of the commanding officers of the units to which "graduates" of the program are assigned subsequent to restoration to duty has been conducted. The reports made by these officers in response to a letter sent to them 90 days after restoration are tabulated in Table 2.

TABLE NO. 2

FOLLOW UP OF PERFORMANCE OF MEMBERS OF THE REHABILITATION COMPANY UPON RESTORATION TO DUTY STATUS FOR NINETY DAYS *

(Evaluations were made by the commanders of the companies to which Rehabilitation Company graduates were subsequently assigned. 30% of inquiries sent received no reply. The percentages given are based upon the replies received.)*

1 October 1956 - 1 May 1957

Known Successful Rehabilitations

EXCELLENT	18%
GOOD	27%
FAIR	10%
POOR	3%
TOTAL KNOWN NON-RECIDIVISTS	58%

Known Unsuccessful Rehabilitation

RETURN TO STOCKADE	27%
UNDESIRABLE DISCHARGE	3%
AWOL	12%
TOTAL KNOWN RECIDIVISTS	42%

* Data obtained from Post Stockade, Fort Dix, New Jersey

Individuals admitted to stockades invariably have a high administrative discharge rate. The occurrence per quarter expressed as an incidence per 1,000 per annum of this disposition in this group is reflected in figure 6 and compared with the over-all post rate. It is to be noted that a sharp early rise tended to level off toward the level which existed prior to the onset of the program.

The recidivism rates are reflected in figure 7. Of significance is the disappearance of recidivism beyond 5 times and the near disappearance of recidivism beyond 4 times. Approximately 18 per cent of the population had had 3 or more previous courts martial prior to the onset of the program which figure has dropped to approximately 5 per cent. The incidence of first offenders has not changed significantly.

The number of confined individuals per 1,000 mean post population was greater in this stockade than is typical of posts army-wide. To some degree at least, this reflects the presence of a substantial number of individuals from other posts apprehended in local areas and confined at Ft. Dix for disposition (table 1). The program described has, however, been accompanied by a

QUARTERLY RATE OF ADMINISTRATIVE DISCHARGES (AR 635-89, AR 635-206, AR 635-208, AR 635-209) EXPRESSED AS INCIDENCE PER 1,000 PER ANNUM

1 JULY 1954 — 31 DECEMBER 1956

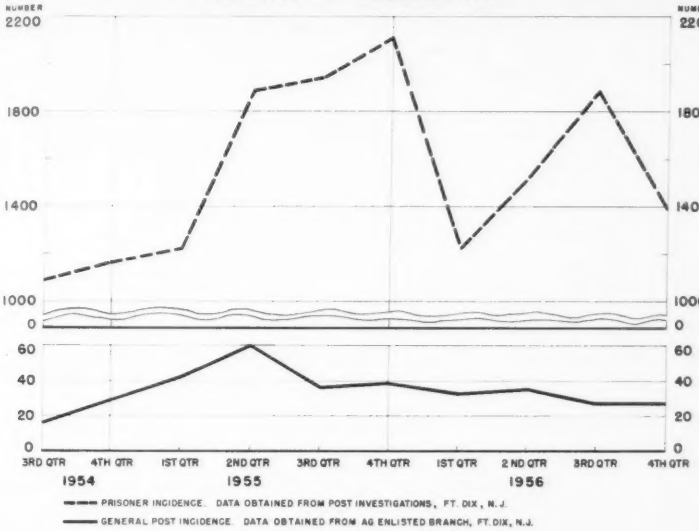


Fig. 6

PERCENTAGE OF RECIDIVISM MEASURED BY THE INCIDENCE OF PREVIOUS COURTS-MARTIAL IN THE PRISONER POPULATION

1 JULY 1954 - 31 DECEMBER 1956

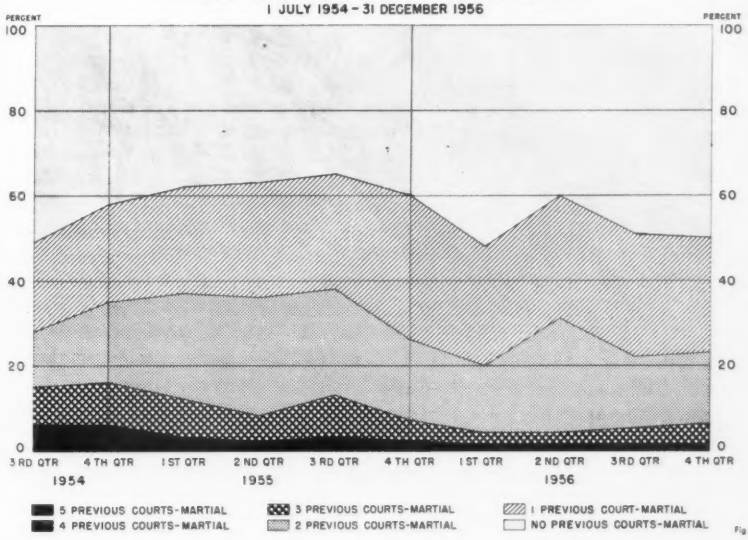


Fig. 7

gradual diminution in the number of prisoners per 1,000 mean post population, which now approaches more nearly the average post's experience. This is reflected in figure 8. This incidence has dropped from a high of 18 prisoners per 1,000 troops to about 10 prisoners per 1,000 troops. The establishment of an overseas replacement station in the middle of this period produced no appreciable change in the data.

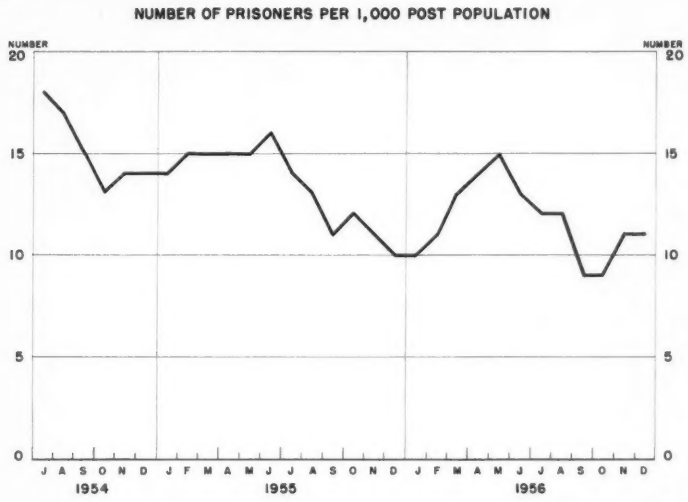


Fig. 8

SUMMARY

The social atmosphere of modern America and the pressures presently impinging upon the commander of a post in the U. S. Army are such that a stockade must be operated in a fashion that will avoid incidents leading to danger to life or limb. In addition, this group contains a high percentage of persons of low military potential whose disposition is economically advantageous once this has been clearly established. A program of mutual cooperation between stockade and psychiatric personnel appears to be an effective device to attain this end. A constructive program for the rehabilitation of those who can be reclaimed is described. This latter appears to avert the confirmation of delinquent behavior as a persistent behavior pattern which leads to an unnecessarily high loss of personnel. The results of this sample program are presented.

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EVALUATION OF A PACKAGED RETENTION ENEMA IN PREPARATION FOR PROCTOSIGMOIDOSCOPY

FRANK K. ABBOT, *Captain, USAF (MC)*
LEE S. MONROE, *Captain, USAF (MC)*
FRANCIS M. SPENCER, *Captain, USAF (MC)*

PROCTOSIGMOIDOSCOPY is an essential diagnostic examination for patients with colonic and anorectal symptoms. More recently it has been urged as an integral part of the routine physical examination on all patients over 35 or 40 years of age.[1, 2] In spite of its importance, it has been looked upon by patients, ward personnel, and many physicians with disfavor. This has primarily been due to the problem of obtaining an adequate preparation. Traditionally, patients are prepared with enemas or laxatives, both of which are uncomfortable, aesthetically repellent, and involve the expenditure of considerable time. It is not unusual for the patient to spend at least 10 minutes in an uncomfortable position, most of which time is taken up by the unhappy physician laboriously swabbing or aspirating feces, in order to obtain a clear view. In many instances the self-prepared patient, having spent many uncomfortable hours, comes for the examination so poorly prepared that he must be rescheduled and attempt the onerous chore all over again. This often has resulted in his deferring the examination; such delay may at times prove to be tragic.

In the course of investigating the incidence of rectal or rectosigmoid polyps in a large group of asymptomatic young airmen,[3] we encountered considerable difficulty in obtaining adequate preparations and, frequently, reluctance on the part of the subjects for re-examinations. We therefore decided to investigate the effectiveness of a recently introduced packaged retention enema preparation of sodium biphosphate and sodium phosphate.* Our results were so satisfactory that we have adopted it as the routine preparation for proctosigmoidoscopy in our active proctoscopy clinic. This communication is a report of the results of our study.

From U. S. Air Force Hospital, Lackland Air Force Base, Tex. Dr. Abbot is now at 163 Grove St., Waterbury, Conn.

*Retention enema containing 16 grams sodium biphosphate and 6 grams sodium phosphate in each 100 ml, supplied by the C. B. Fleet Co., Inc., Lynchburg, Va.

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MATERIAL AND METHODS

Subjects for this study were 333 asymptomatic young airmen being investigated for incidence of polyps, 50 foreign language students examined for enteric parasites, and 283 patients referred for a proctosigmoidoscopic examination with gastrointestinal symptoms. No preliminary preparation was made. The majority of the subjects were examined in the first part of the morning for the sake of convenience, but many were examined in the late afternoon on the day of their first visit to the referring clinic or hospital ward.

With the subject in the knee-chest or left lateral position, the entire contents (133 ml) of the plastic "squeeze bottle" was introduced into the rectum. The subject was instructed to retain the enema as long as he was able and then to remain on the commode until he felt his bowel had moved completely. Proctosigmoidoscopy was done at varying time intervals following the enema. The following data was recorded: (1) Time enema was retained, (2) time between enema and examination, and (3) the presence and type of symptoms produced by the enema.

At examination, the adequacy of the preparation was graded as excellent if the rectum and rectosigmoid were completely clear of feces; good if the small amount of liquid or solid feces present was easily removed; poor if a large amount of feces, necessitating much swabbing or suction, was encountered. When preparation was so poor as to prevent or limit the examination, a second enema was given. The degree of hyperemia, spasm, and mucus present was graded by the method of Almy and Tulin.[4] In a certain number of patients, swab specimens of rectal contents were examined microscopically for ova and parasites. In another group, stool specimens obtained both spontaneously and from enema results in addition to rectal swabs were examined.

DISCUSSION

Preparations were excellent in 526 subjects (78.5 per cent), good in 120 (18.5 per cent), poor in 20 (3 per cent). Of the latter, 7 (1 per cent) had to have repeat enemas, all of which resulted in excellent preparations. The average time the enemas were retained was 5 minutes, ranging from 1 to 12 minutes. The average interval from enema to examination was 28 minutes, with extremes of 4 and 90 minutes. There was no correlation between either the retention time or the interval until examination and the quality of the preparation. Thirty-seven subjects (5.5 per cent) complained of mild cramps resulting from the enema. The majority simply experienced a compelling urge to defecate. Two hundred and five subjects (31 per cent) were found to have increased amounts of mucus (the great majority 2 plus), 175 (27 per cent)

had hyperemia of the colonic mucosa (mostly 2 plus), and 68 (12 per cent) were found to have spasm, 2 plus being the majority degree. There was no correlation between the time of retention or interval of examination, and the presence or degree of these findings. They were usually found alone, and only very seldom were associated with others. Spasm and hyperemia were associated more often than the other changes. The more than two thirds with no change showed a widely patent rectum and rectosigmoid of healthy appearance, into which the proctosigmoidoscope was introduced with ease and a minimum of discomfort. The average distance examined in all subjects was 8.7 inches. There was no correlation between this and the quality of preparation.

Two hundred and twenty of these subjects had rectal swab smears examined for ova and parasites. Twelve of these were positive for parasitic ova and cysts.* Five were characterized as having excellent preparation; seven were good. Fifty language students, mainly Asiatics, had rectal smears examined microscopically following the enema, and also spontaneously passed stool specimen examined by concentration technic. Three of the smears were positive; 29 of the stool specimens were positive for parasites.* All of the preparations were characterized as excellent. In addition, the stools of 70 subjects obtained as returns from the enema were subjected to examination by concentration technic, 16 of which were positive for parasites. Also, 3 Puerto Rican patients had mucosal biopsies, positive for viable *Schistosoma* ova.

CONCLUSIONS

No comparative figures on the quality of preparation in patients prepared traditionally for a proctosigmoidoscopy are available. Three hundred consecutive records of our routine proctosigmoidoscopies were studied with this in mind, but insufficient characterization of preparation was noted. There is no doubt in the minds of those of us who have experienced both methods, however, that the majority of preparations by the enema described are infinitely superior to those by traditional methods. The field is completely clear almost 80 per cent of the time, and with the lack of spasm reported here in 88 per cent, the instrument may be introduced rapidly and relatively comfortably. The lack of prior preparation and the consequent availability of the examination at any time of the day encourages the use of this procedure and speeds diagnosis of anorectal conditions. Ease and lack of

*Positive smears showed *Entamoeba coli* cysts, ascaris ova, *Trichomonas* hominis, protozoa, and *Iodamoeba* cysts. Stool examinations by concentration technic showed ascaris ova, hookworm ova, *Strongyloides* larvae, *Trichostrongylus orientalis, Clonorchis sinensis, T. hominis, Giardia lamblia,* chilomastix, *Entamoeba histolytica, Iodamoeba bütschlii, Endolimax nana,* and pinworm ova.

discomfort during preparation encourages patient co-operation. This preparation also provides for better detection of small lesions and biopsy may be accomplished readily. The average distance examined in 300 patients prepared traditionally was 8.6 inches, compared with 8.7 inches in our subjects.

Our results show that adequate rectal smears for parasitic trophozoites, ova, and cysts should not be expected from this preparation. The majority of our positive smears were from inadequate preparations. It may be inferred from the large number of positive stool examinations with negative rectal smears in preparations found to be excellent, that this method of preparation is too thorough. On the other hand, reliable fresh stool specimens may be obtained by the retention enema. It is an excellent preparation for mucosal biopsies for *Schistosoma* ova.

The mechanism of action of the Fleet enema is not known. Of interest in this regard are two patients not included in this series. Both had saddle anesthesia with cord bladder—one from metastatic carcinoma of the breast to the sacrum, the other from trauma to the cord. Both were given the packaged enema for fecal impactions. Neither had an urge to defecate, nor did fecal returns result. It may be inferred that the enema initiates a local rectal reflex for defecation.

SUMMARY

Of 666 patients given Fleet enemas as preparation for a proctosigmoidoscopy, 78.5 per cent had excellent preparations; 18.5 per cent, good; and 3 per cent, poor. This preparation may be given quickly, without prior preparation, anytime of the day. It causes little discomfort. This method is recommended to replace other traditional preparations for proctosigmoidoscopy.

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CONGENITAL DERMAL SINUS AND CYST

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NO SUBJECT in the field of neuropathology is more confusing than the nomenclature and classification of the "congenital tumors." The clinical literature on intracranial and intraspinal "dermoids" is especially ambiguous from the viewpoint of pathology.

The relative infrequency of congenital tumors has led in many instances to the presentation of lesions of widely varying microscopic appearance as a single group. Thus, from the neurosurgical standpoint, intracranial "dermoids" often have been grouped with the teratomas, and by inference have been classified as true neoplasms. This grouping would appear to be incorrect pathologically, and might lead to errors in clinical management. Illustrative cases will be presented.

PATHOGENESIS OF TERATOMAS

Sweet[1] collected 156 cases in 1940 and classified them as dermoid, teratoid, and teratomatous intracranial tumors in 12 different groups according to location. He pointed out the great difficulty in classification, stating that these tumors consisted "pathologically of a series of gradually increasing complexity, and that any separation of them into subgroups must be at arbitrary points." Sweet further called attention to the fact that Ewing[2] had discarded the idea of metaplasia of nonectodermal structures from the connective tissue elements of the skin (the so-called "mixed tumors") in favor of the concept of a natural unfolding of embryonal cell potencies, and that these tumors were now known as teratomas.[3]

Willis[4] gave the literal meaning of teratoma as "a malformation which is also a true tumor" and defined teratoma as a "true neoplasm composed of multiple tissues foreign to the part in which it arises." In discussing the hypotheses of origin of teratomas, he stated that the most popular view is that these growths represent distorted fetuses, derived either from included twins of the

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bearers or from parthenogenic proliferation of the bearers' own germ cells. Willis thought this was incorrect, however, because the common sites of teratomas are not the sites of parasitic twins; most teratomas arise during early stages of development when their bearers have no mature germ cells capable of parthenogenesis; topographic study of teratomas shows that while sometimes highly organized they are not fetal in form; and the view that they represent embryos ignores the fact that they are true neoplasms with powers of independent growth not seen in "amorphi" or parasitic twins. Instead, teratomas may represent neoplasms in areas of tissue which escaped from the action of the primary organizer during early embryonic development. The site of distribution of teratomas points to the operation of growth disturbances emanating along the primary axis.

SYNONYMS

Distinct clinical and histologic entities have come to be recognized among the congenital tumors. This has led to different terms, such as chordoma of the clivus of the base of the sphenoid,[5] craniopharyngioma or cyst of Rathke's pouch, and teratomas of the pineal region.[6] Confusion has been compounded by the various synonyms used by different authors. Classification according to microscopic determination of the number of germ layers has led to terms such as monodermoma, bidermoma, and tridermoma. Classifications according to predominant tissues (ovarian goiter) and the organ where the tumor arose (cholesteatoma of the ovary) have been used. The term cholesteatoma[7,8] may be used to describe the gross appearance of several different entities within the cranial cavity. Degrees of malignancy, on both a clinical and a histologic basis, led to terms such as teratoblastoma, embryoma, teratocarcinoma, and embryonic carcinoma. Even common terms often are misused clinically. For example, the superficial epidermoid is often called a "wen" or "sebaceous cyst," when in reality it contains only desquamated squamous cells.

If no exact classification could be made, the ending "oma" often became changed to "omatous." The suffix "oid," originally meaning "form" from the Greek, has come to mean "not quite like, but almost."

Various other terms were described in an article by Black and German,[9] and in a review by Sachs and Horrax.[10]

TRUE NEOPLASMS NOT SEPARATED

In 1946, in an article on cystic teratomas and teratoid tumors of the central nervous system in infancy and childhood, Ingraham and Bailey[11] listed 15 cases, 8 intracranial and 7 intraspinal. This series apparently included 3 "dermoids" of the posterior fossa. These authors stated, "Since certain tumors of the central

nervous system have much histological resemblance to the group under discussion but present entirely different surgical problems, it has been necessary to set arbitrary limits to the series. Craniopharyngiomas and sacrococcygeal teratomas have been excluded, as have chordomas. We have included the dermoid cysts, however, because they present neurosurgical problems similar to those of the cystic teratomas and because it is our belief *that they belong histologically and developmentally to the same group as the tumors containing more varied organoid elements."**

In 1950, Black and German[9] introduced an article on congenital tumors with the statement: "The epidermoid, dermoid, teratoid, and teratomatous tumors of the central nervous system are congenital *neoplasms** that are of particular surgical, pathological, and embryological interest."

Others do not agree that the "dermoid" of the posterior fossa is a neoplasm.

Willis[4] stated in 1951 that a teratoma is a true tumor and, unlike a simple malformation, has powers of progressive growth, either in benign or malignant form. Teratomas should be distinguished from non-neoplastic malformations of all kinds, whether relatively simple heterotopias of particular tissues or complex malformations such as double monsters or imperfect twins. Sequestration dermoid cysts of the skin or cranial cavity, branchial cysts, and many other developmentally misplaced and supernumerary parts and tissues (Albrecht's "hamartomas") all constitute masses of multiple kinds of tissue in the wrong places but are non-neoplastic and quite unrelated to teratomas.

Dermoid cyst is a frequently used synonym for benign cystic teratoma of the ovary when the dermal elements predominate. If a thorough search is made, tissues other than skin can usually be found. The same name is also applied to intracranial skin-lined cysts. It appears, however, that most intracranial "dermoids" probably are not true neoplasms. To prevent any unwarranted connotation, the term "congenital dermal sinus" or "congenital dermal cyst" would seem preferable.

PATHOGENESIS OF CONGENITAL DERMAL SINUSES AND CYSTS

Ingraham and Matson[12] pointed out that since the neuroectoderm separates from the epithelial ectoderm along the dorsum of the embryo, it is natural to expect that persistent epithelial defects may extend to any depth from the deeper layers of the skin to the substance of the central nervous system; and, because this midline fusion begins in the middle of the embryo and proceeds both cranially and caudally, there is chronologically more opportunity

*Italics added.

for cutaneous defects to occur in the lumbosacral and suboccipital regions. This correlates clinically with the frequency of occurrence of congenital defects along the midline at these two locations.

This pathogenic mechanism would seem to apply whether the sinus or stalk connection to the surface remains or disappears. If the defect occurs early in embryonic development, with "pinching off" at about the third or fourth week of fetal life, then a simple "epidermoid" might be expected to result. Just when the accident occurs that includes other elements and gives rise to a "dermoid" is not definitely known, nor is it known at just what stage "cell rests" occur that later give rise to true neoplasms, the teratomas. Because of their autonomous growth they are usually thought of as embryonic. Also unknown is the mechanism whereby they can remain in situ for years and then in some cases give rise to rapidly growing malignancies. Just where a similar mechanism fits in for the production of meningoceles or aplasias, and what brings them about, is also still largely a matter of conjecture.

In the sacral area the commonest defect is the dermal sinus. This is not an infrequent finding, even on routine examination, and it is now generally recognized as a congenital defect.[13] It is usually entirely dermal, so that the term "pilonidal sinus"[14] is superior to "benign sacral cyst teratoma." Only a small percentage have a residual connection with the spinal canal, and surgical removal of the pilonidal sinus generally is performed only after the lesion causes symptoms, usually from local infection.

There also may be true neoplasms in the sacral area. These congenital tumors may be either benign or malignant, and may be found in infancy or in the adult. Thus, congenital defects as well as congenital neoplasms (the true teratomas) may affect the spinal canal at any position along the spinal axis.[10]

If these congenital dermal sinuses of either the anterior or posterior neuropore are not classified with the teratomas but are considered developmental defects, they might be expected to occur in relation to other types of developmental anomalies. Even teratomas and lipomas are found not infrequently in association with other central nervous system anomalies.[9]

In the past two years, five patients with intracranial dermal cysts have undergone craniotomy at this hospital. In one additional patient this clinical diagnosis was made, but operation was not advised. Four of these cases were somewhat unusual and seemed of interest in view of the above discussion of pathogenesis.

CASE REPORTS

Case 1. A 4½-month-old white boy was admitted to the hospital for elective neurosurgical excision of two occipital masses, both present

since birth. The child was a product of normal pregnancy, labor, and delivery. He had been in excellent health except for two episodes of mild otitis media. The head size had developed normally, and no vomiting or other symptoms of increased intracranial pressure had occurred.

Physical examination was normal except for the occipital lesions (fig 1). The upper mass was 2.5 cm in diameter, smooth, and transilluminated well. It had a thin wall and was cystic. The fluid contents could be compressed into the cranial cavity easily, and a bony defect could be palpated. The lower mass was 3 cm in diameter, did not transilluminate, and was covered with thickened skin and hair. The contents were firmer and could not be displaced.

Figure 1 (case 1). Encephalocele above; dermal cyst below. Sinus tract is lateral to lower mass.

At operation, a previously undetected sinus tract was found after shaving at the lateral edge of the lower mass. A probe could easily be passed through the sinus to the bone, but not beyond the skull.

The upper mass was removed first and proved to be a meningocele containing no nervous tissue grossly. The wound was completely sutured, then the lower lesion was excised. It proved to be much thicker-walled and was filled with sebaceous material and hair. The accompanying sinus tract ended blindly in a stalk that appeared to go through a very small opening in the occipital bone. In view of the lack of neurologic symptoms and the contaminated nature of the external wound, the stalk was transected at the level of the outer table and intracranial exploration of the posterior fossa was not carried out.

Postoperatively, the patient recovered promptly. He was discharged on the eighth postoperative day.

Pathologic examination verified the operative finding that the upper lesion had a dural lining while the lower one was a typical dermal cyst.

Comment. It is believed that this case represents two associated congenital anomalies and that this type of dermal cyst can in no way be considered a neoplasm. As Logue and Till[15] have stated, these lesions enlarge only "as a result of the secretion of sebaceous material and the desquamation of epithelium within." That symptoms from an intracranial portion of the dermal abnormality may develop in the future is admittedly a calculated risk.

Case 2. A 13-month-old white girl was admitted to the U. S. Naval Hospital, Chelsea, Mass., because of a lesion of the scalp present since birth. Pregnancy, delivery, and postnatal development had been normal. The only physical abnormality consisted of a mass in the midline in the midparietal area. The mass was approximately 3 cm in diameter and was raised about 2 cm, with a definite large central dimple. There was a pronounced port-wine discoloration of the surrounding skin.

Roentgenograms revealed a small bony defect in the midline slightly anterior to the soft tissue mass and also anterior not only to the lambdoid suture but also to a second suture line formed by a wormian bone (the so-called incarial bone).

It was thought clinically that this was a typical congenital dermal sinus, but more anterior than usual. It was not known whether a sinus tract from this midparietal area led to the posterior fossa or ended above the tentorium.

At operation the skin lesion was excised and bone was removed so that the underlying stalk could be followed intracranially. The sinus was found to go through the dura, tightly adherent to the left side of the longitudinal sagittal sinus. A dural flap was elevated over the left parietal cortex. A probe was inserted in the sinus and surprisingly a sharp posterior angulation was found. The probe was inserted with ease

to a depth of 8 cm. The sinus appeared to run between the dural leaves of the falx and was visualized downward between the hemispheres for a depth of about 3 cm, when the left parietal cortex was retracted laterally. No mass was seen. Further exploration along this route was not considered to be warranted. Lipiodol (brand of iodized oil), 1.5 ml, was injected into the sinus tract, the sinus tied with silk, and the operation terminated.

Postoperative roentgenograms (fig 2) demonstrated an accumulation of dye within the posterior fossa. This was believed to be within a "dermal cyst."

Figure 2 (case 2). Posteroanterior and lateral roentgenograms after injection of Lipiodol into sinus tract.

The patient did well postoperatively. Forty-eight hours later roentgenography was repeated and revealed that the Lipiodol was scattered throughout the posterior fossa with an accumulation pooled inferiorly, apparently in contact with the occipital bone. A roentgenogram of the lumbar spine showed dye in the lumbar spinal canal. A pneumoencephalogram was carried out under general anesthesia and air was found to enter the area in the posterior fossa previously believed to be a "dermal cyst" (fig 3). The patient was taken to the operating room for exploration of the posterior fossa.

At operation the dura over the cerebellar hemispheres appeared normal. Upon turning a dural flap the arachnoid membrane was kept intact. It appeared normal and beneath this thin covering spinal fluid, bubbles

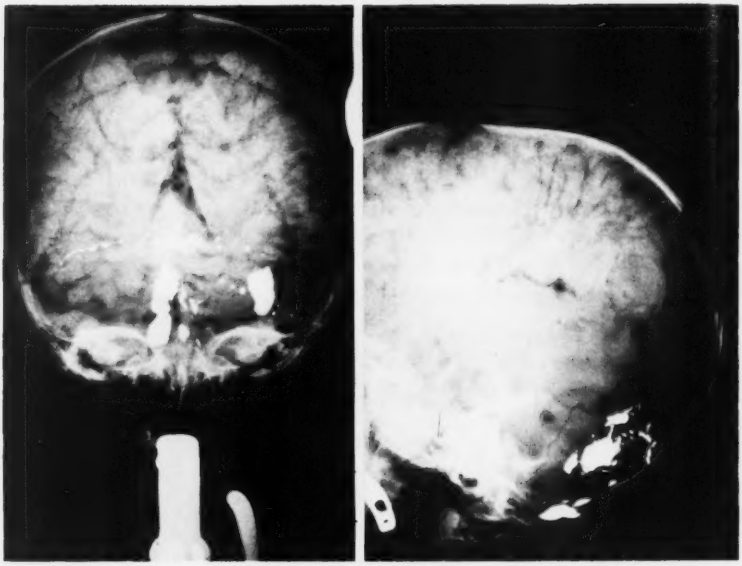

Figure 3 (case 2). Posteroanterior and lateral pneumoencephalograms, showing air in area of "cyst."

of air, and droplets of Lipiodol could be seen. The arachnoid was opened widely. It was then apparent that the cerebellum was abnormal. The two normal-appearing hemispheres could be retracted apart and were separate except at the uppermost ventral part where they were connected across the midline by several large veins. In view of the patient's lack of symptoms it did not seem justified to explore this area further, although the aplasia of the vermis and midline structures seemed almost complete. The under surface of the posterior part of the tentorium was easily visualized. No dermoid cyst was found. Instead, an inverted funnel was seen in the midline where apparently the "dermal sinus" widened out and emptied directly into the subarachnoid space (fig. 4). One large vein traversed the opening in the midline and several small bridging veins descended to the veins previously seen in the midline in the superior aspect of the cerebellum. The operation was terminated.

Postoperatively the child did well and was discharged on the thirteenth day.

The pathologist's report on the specimen of skin and upper sinus tract removed at the first operation was "consistent with cicatrization, wall of dermoid cyst."

Review of the slides (fig. 5) revealed that normal skin of the scalp surrounded a central depressed area. There was loss of almost all the hair follicles, sweat glands, and sebaceous glands in the depressed area

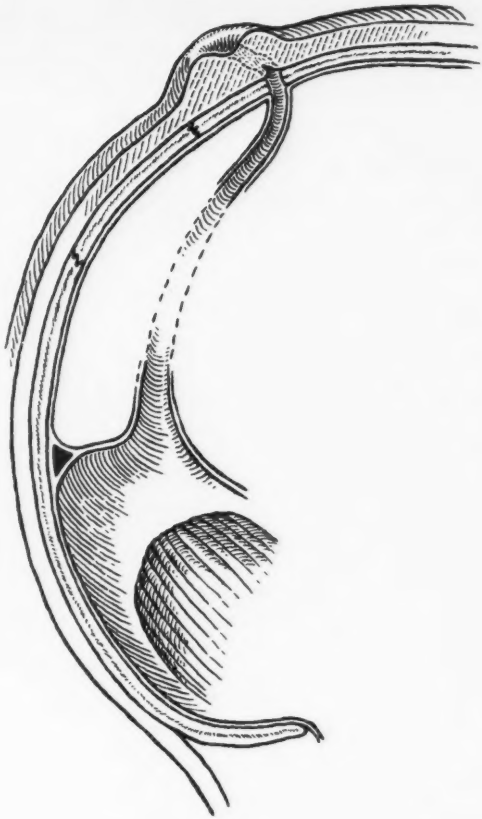

Figure 4 (case 2). Drawing of sinus tract reconstructed from roentgenograms and surgical findings. (Mid-sagittal view)

and the normal collagen of the dermis was disorganized. A striking feature was the great number of dilated, tortuous, thin-walled blood vessels although these did not appear to represent a true hemangioma. The epidermis was continuous on the surface and did not extend into a sinus. The dermis was scarred and was continuous with an underlying cicatricial stalk containing no skin elements. There was a cellular layer, resembling dura, around the stalk. The findings were consistent with those of a meningocele, although it might represent, in part, an abortive congenital dermal sinus.

Comment. It is thought that this was an unusual case from the standpoint of pathogenesis. Clinically the external lesion and sinus tract appeared to be typical of a congenital dermal sinus.

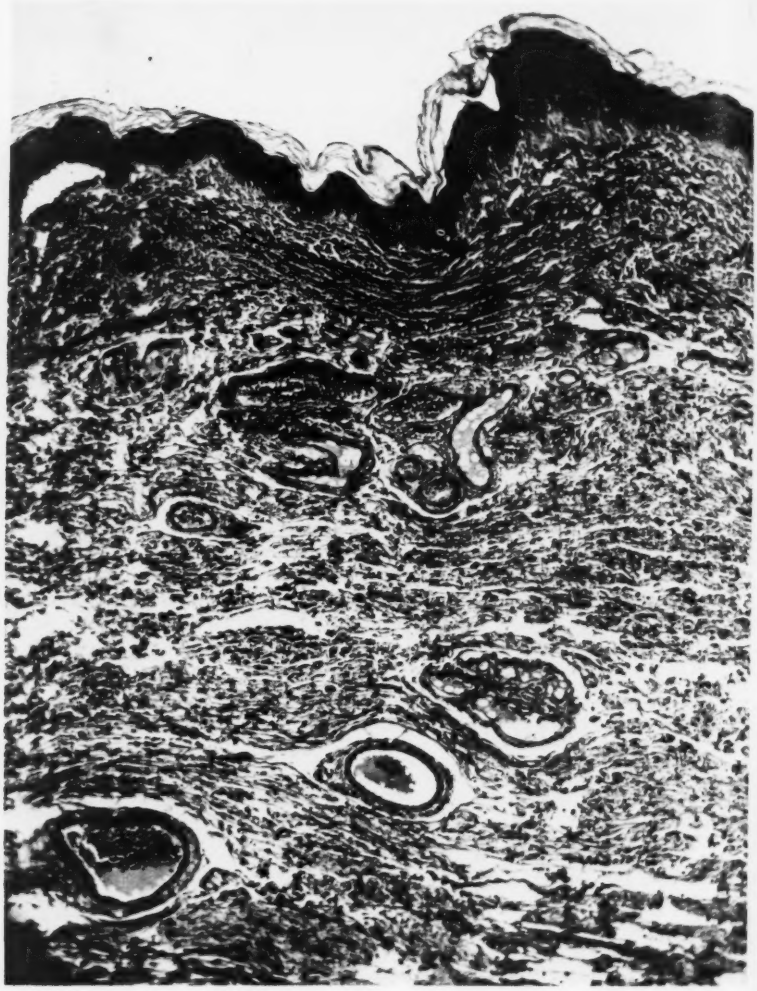

Figure 5 (case 2). Photomicrograph of section through externally presenting lesion. (Hematoxylin and eosin stain; × 100)

By emptying into the subarachnoid space it had aspects of a meningocele. The congenital nature of the defect was further shown by the associated aplasia of the midline structures of the cerebellum.

Case 3. A 7-week-old white girl was admitted to this hospital, because of an occipital mass present since birth (fig. 6). Pregnancy, delivery, and postnatal development had been normal. Physical and neurologic

Figure 6 (case 3). Occipital mass with "port-wine" discolored area on superior surface.

examinations revealed a firm rounded mass ¾-inch in diameter in the midline of the occiput. It did not transilluminate and did not pulsate with heart beat, respiration, or crying. An associated "port-wine hemangioma" was present at the base of the mass.

Roentgenograms of the skull revealed a small radiolucent defect, 5 mm in diameter, in the occipital bone under the center of the overlying mass. Ventriculograms failed to show any abnormality except small occipital ventricular horns, bilaterally symmetrical, which were considered within the limits of normal variation. The diagnosis of encephalocele was concurred in by all observers and the patient scheduled for craniotomy.

At operation, the mass was discovered to be a "dermoid cyst" when the tumor burst and sebaceous material escaped. The stalk through the bone went through the meninges also and ended blindly in the tissue of the cerebellum.

Following operation the child did well and was discharged on the twelfth postoperative day.

The pathology report described the gross specimen as a cylinder of skin with an attached underlying cyst filled with hair and sebaceous material, measuring 2.5 cm in diameter. The diagnosis was "dermoid cyst, occiput."

Review of the slides (fig. 7) revealed that the cyst was lined by skin showing gentle papillation of the epidermis with an abundant stratum corneum. The numerous hair follicles, sebaceous glands, and sweat

Figure 7 (case 3). Photomicrograph of section through cyst. (Hematoxylin and eosin stain; × 100)

glands were mature, although the intervening connective tissue was looser than normal and contained many large capillary channels. Vascular scar tissue was noted in the deep dermis at one point. The diagnosis was congenital dermal cyst.

Comment. In retrospect, the port-wine hemangioma and the firmness of the occipital mass should have led to at least the suspicion of a congenital dermal cyst preoperatively. The pathologic picture was typical of a dermal cyst. The case is presented to illustrate that clinically the differential diagnosis of this condition and encephalecele[16] is not always clear-cut.

Case 4. Recently a 13-year-old girl was referred to one of us. On routine physical examination before going overseas she had mentioned a small occipital midline skin lesion. The patient was asymptomatic and had never had any signs or symptoms of meningitis.

Examination of the scalp revealed a flat reddish lesion, 4 mm in diameter and raised 1 mm. It had never bled, been tender, or had any known discharge. The alert pediatrician had requested roentgenograms of the skull, however, and on close examination there appeared to be a small bony defect 2 mm in diameter in the occipital area, compatible with a sinus tract. Neurologic examination was completely negative, and surgical exploration was not recommended.

Comment. The decision not to operate was received with much discussion. The literature was reviewed and many cases were reported which pointed out the danger of this portal of entry for infection of the nervous system.[15,17] A suggestion has been made that the discovery of a congenital dermal sinus might be justification for excision before any signs of infection or obstruction from an enlarging cyst occurs.[18] Most of the clinical literature, however, is not statistically of value inasmuch as these congenital dermal sinuses and cysts have been included with the true neoplastic teratomas. Most conclusions reached have been on the basis of very few cases or on theoretical grounds. We are not familiar with any series of occipital dermal sinuses that have been followed without resorting to surgical intervention. In this case it was believed that even the small risk of surgical exploration was perhaps not justified in the absence of signs of infection or of obstruction from an enlarging cyst in a non-neoplastic congenital defect that presumably had been present for 13 years. This viewpoint admittedly is not presented with any conviction.

That the morbidity and mortality associated with these congenital dermal sinuses, treated or untreated, are important cannot be denied, even though they are relatively rare lesions. Although this may be a matter of some practical clinical importance, a recent text on neuropathology still lists these "dermoid cysts" under the chapter on neoplasms and not as congenital malformations.[19]

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SUMMARY AND CONCLUSIONS

The intracranial "dermoid" of the posterior fossa, whether largely intracranial or external, often is associated clinically with the teratoma group of neoplasms. It is believed that these lesions should be considered congenital defects and that they are not neoplasms. It is suggested that the term "dermoid" be discarded in favor of "congenital dermal" sinus or cyst. These lesions should be considered as a separate entity so that statistically reliable conclusions regarding their natural history may be reached.

Four cases of congenital dermal sinus or cyst of the posterior fossa are presented. The first case illustrates that the dermal cyst may occur in association with another type of congenital anomaly. The second case indicates that these lesions cannot always be distinguished clinically from other congenital anomalies. The third case demonstrates that the external dermal cyst may be mistaken clinically for an encephalocele. The fourth case, in which only a presumptive diagnosis could be made, was presented to illustrate how little is actually known about the expected course of events in some instances of dermal sinus.

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EFFECTIVENESS OF NEW ORAL DIABETES TABLETS

"The effectiveness of Orinase is greatest in older and milder diabetics. It should be stressed that it has been found almost totally ineffective in patients whose diabetes began in childhood or adolescence and in adult patients with severe diabetes. In such cases attempts to substitute oral treatment for insulin may lead to serious consequences. While extensive trials in several thousand cases have thus far not been found to show any serious toxicity, the investigators and clinicians who have worked with the drug cannot say at the present that more widespread use over periods of several years may not be somewhat hazardous. Fortunately, the manufacturer and all physicians are alerted to these possibilities and we may be sure that results of treatment will be closely scrutinized for some years to come, so that any possible untoward effects may be prevented or stopped in good time. It is important to emphasize that rigid dietary management of diabetes remains the keystone of the arch of treatment. It is generally agreed that substitution of the new drug for insulin in patients who have received the latter should be very closely supervised and may necessitate hospitalization for the initial period. It will take many years to judge the effect of any such drug on life expectancy and occurrence of complications in diabetes. During the past few months a still newer drug, N^1-beta-phenethylformamidinyliminourea, temporarily designated DBI, has been tested in diabetes. This substance does not belong to the tolbutamide chemical family. The available information on DBI is too scant as yet to allow any preliminary conclusions."

—AMERICAN DIABETES ASSOCIATION
in *Journal of Indiana State Medical Association*
p. 1114, Sept. 1957

FIRST-AID MEASURES IN POISONING

The aim of first-aid measures is to help prevent absorption of the poison. SPEED is essential. First-aid measures must be started at once. If possible, one person should begin treatment while another calls a physician. When this is not possible, the nature of the poison will determine whether to call a physician first or begin first-aid measures and then notify a physician. Save the poison container and material itself if any remains. If the poison is not known, save a sample of the vomitus.

MEASURES TO BE TAKEN BEFORE ARRIVAL OF PHYSICIAN

I. *Swallowed Poisons*

Many products used in and around the home, although not labeled "Poison," may be dangerous if taken internally. For example, some medications which are beneficial when used correctly may endanger life if used improperly or in excessive amounts.

In all cases, *except those indicated below,* REMOVE POISON FROM PATIENT'S STOMACH IMMEDIATELY by inducing vomiting. This can not be overemphasized, for it is the essence of the treatment and is often a lifesaving procedure. Prevent chilling by wrapping patient in blankets if necessary. Do not give alcohol in any form.

A. Do Not Induce Vomiting If:

1. Patient is in coma or unconscious.
2. Patient is in convulsions.
3. Patient has swallowed petroleum products (i. e., kerosene, gasoline, lighter fluid).
4. Patient has swallowed a corrosive poison (symptoms: severe pain, burning sensation in mouth and throat, vomiting).

   CALL PHYSICIAN IMMEDIATELY

   (a) Acid and acid-like corrosives: sodium acid sulfate (toilet bowl cleaners), acetic acid (glacial), sulfuric acid, nitric acid, oxalic acid, hydrofluoric acid (rust removers), iodine, silver nitrate (styptic pencil).

   (b) Alkali corrosives: sodium hydroxide—lye (drain cleaners), sodium carbonate (washing soda), ammonia water, sodium hypochlorite (household bleach).

From the Committee on Toxicology of the Council on Drugs of the American Medical Association, as published in the *Journal of the American Medical Association*, 12 October 1957, pages 686-687.

Reprints of this report may be obtained from Bernard E. Conley, Ph. D., secretary, Committee on Toxicology, A. M. A., 535 North Dearborn Street, Chicago 10, Ill.

If the patient can swallow after ingesting a *corrosive poison*, the following substances (and amounts) may be given:

For acids: milk, water, or milk of magnesia (1 tablespoon to 1 cup of water).
For alkalis: milk, water, any fruit juice, or vinegar.
For patient 1-5 years old—1 to 2 cups.
For patient 5 years and older—up to 1 quart.

B. Induce Vomiting When Non-corrosive Substances Have Been Swallowed:
1. Give milk or water (for patient 1-5 years old—1 to 2 cups; for patient over 5 years—up to 1 quart).
2. Induce vomiting by placing the blunt end of a spoon or your finger at the back of the patient's throat, or by use of this emetic—2 tablespoons of salt in a glass of warm water.

When retching and vomiting begin, place patient face down with head lower than hips. This prevents vomitus from entering the lungs and causing further damage.

II. *Inhaled Poisons*

1. Carry patient (do not let him walk) to fresh air immediately.
2. Open all doors and windows.
3. Loosen all tight clothing.
4. Apply artificial respiration if breathing has stopped or is irregular.
5. Prevent chilling (wrap patient in blankets).
6. Keep patient as quiet as possible.
7. If patient is convulsing, keep him in bed in a semidark room; avoid jarring or noise.
8. Do not give alcohol in any form.

III. *Skin Contamination*

1. Drench skin with water (shower, hose, faucet).
2. Apply stream of water on skin while removing clothing.
3. Cleanse skin thoroughly with water; rapidity in washing is most important in reducing extent of injury.

IV. *Eye Contamination*

1. Hold eyelids open, wash eyes with gentle stream of running water *immediately*. Delay of few seconds greatly increases extent of injury.
2. Continue washing until physician arrives.
3. *Do not use chemicals;* they may increase extent of injury.

V. *Injected Poisons* (scorpion and snake bites):

1. Make patient lie down as soon as possible.
2. Do not give alcohol in any form.
3. Apply tourniquet above injection site (e. g., between arm or leg and heart). The pulse in vessels below the tourniquet should

not disappear, nor should the tourniquet produce a throbbing sensation. Tourniquet should be loosened for 1 minute every 15 minutes.

4. Apply ice-pack to the site of the bite.
5. Carry patient to physician or hospital; DO NOT LET HIM WALK.

VI. *Chemical Burns*

1. Wash with large quantities of running water (except those caused by phosphorus).
2. Immediately cover with loosely applied clean cloth.
3. Avoid use of ointments, greases, powders, and other drugs in first-aid treatment of burns.
4. Treat shock by keeping patient flat, keeping him warm, and reassuring him until arrival of physician.

MEASURES TO PREVENT POISONING ACCIDENTS

A. Keep all drugs, poisonous substances, and household chemicals out of the reach of children.
B. Do not store nonedible products on shelves used for storing food.
C. Keep all poisonous substances in their original containers; do not transfer to unlabeled containers.
D. When medicines are discarded, destroy them. Do not throw them where they might be reached by children or pets.
E. When giving flavored and/or brightly colored medicine to children, *always* refer to it as medicine—*never* as candy.
F. Do not take or give medicine in the dark.
G. *READ LABELS* before using chemical products.

HOW TO OBSERVE LIKE SHERLOCK HOLMES

"A physician cannot afford mental pigeonholing. Patients smell out moral pigeonholing or prejudice of any kind. Still the physician should not accept all that is related as if he had blinkers. He should watch for chronologic gaps, inconsistencies and possible concealment of what may be important information. He should listen carefully and critically and observe the patient as he tells his story; how he carries himself, how he speaks, how he uses his hands. Much information may be secured from observation alone. During an interview the physician should be as observant as Sherlock Holmes."

—S. C. WERCH, M. D.
in *Journal of Florida Medical Association*
p. 244, Sept. 1957

PERINATAL MORTALITY ASSOCIATED WITH CESAREAN SECTION

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THE OBSTETRIC literature is replete with reports from several centers concerning the trend of cesarean section in recent years.[1-5] The technic of the operation and an account of its development throughout the years was ably presented by Young.[6] Emphasis has been placed on the need for a decrease in fetal and neonatal mortality resultant from traumatic vaginal deliveries, and a change in indications for cesarean section to attain that end has been suggested by D'Esopo.[4] To further decrease infant wastage Kaltreider[2] advocated a trial of labor in all dystocia cases with vertex presenting where no history of previous cesarean section is present. Delivery is carried out by cesarean section if vaginal delivery proves to be impossible. Landesman[5] has pointed out the minimum risk to the fetus when delivered by section following an unsuccessful trial of labor as opposed to the potential hazard of repeat section producing an increased infant mortality incidence due to inaccurate estimations of fetal age and to rupture of the uterus. With the advent of antibiotics infection has been adequately controlled, and better transfusion technics and well-stocked blood banks appear to be the answer to the hazard of sudden blood loss by hemorrhage. Despite all of these improvements in modern obstetric practice there still is reported from most of our larger centers a definitely greater perinatal loss following delivery by cesarean section over the vaginal route but paradoxically a definite decrease in maternal mortality. In an effort to uncover some of the reasons for the apparent increase in perinatal mortality following cesarean section a study was carried out on all infant deaths associated with cesarean sections performed at this hospital during the period 1 April 1951 through 31 December 1956. Particular attention was directed to (1) the indication for section, (2) the type of anesthesia and agent used, (3) the stage of gestation at time of operative interference, and (4) the fetal weights in so far as these data had any bearing on the resultant

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perinatal mortality. The facts uncovered and the conclusions arrived at during this study provide the basis for this report.

METHOD AND MATERIAL

During the period 1 April 1951 through 31 December 1956, 25,667 patients were delivered at this hospital, and of these 556 (2.2 per cent) were by cesarean section. This is about one-half the accumulated cesarean section rate of 4.02 per cent as reported from published literature by Schneider.[1] It has been the policy in this institution to individualize the indications for cesarean section in each case. The majority of women who were previously operated on in another hospital or by a physician unknown to our staff are usually delivered again by the abdominal route, but "once a section, always a section," is not a hard and fast rule in our hospital. Previous cesarean section was the indication for operation in only 51.7 per cent of the cases.

During the period under study, there were 43 infant deaths associated with 42 cesarean sections for an incidence of 7.72 per cent. An analysis of the indications for cesarean section as noted in table 1 will reveal that for 21 infants the cesarean operation was not the factor causing death.

The indications for performing the operations and the resultant fetal mortality are listed in table 2. All infant deaths are attributed to one indication only and thereby do not adversely affect the statistics. It is to be noted that uterine inertia per se was not considered as an indication; however, after reviewing the charts it was evident there may have been some sections performed for inertia and classified as fetal pelvic disproportion.

A comparison of our cesarean section fetal mortality with the national figures as reported by Schneider is contained in table 3. It will be noted our over-all incidence of fetal wastage is higher than the national average but compares very favorably when computed annually except for the years 1953 and 1954, and no apparent reason for this is readily evident.

An analysis of all fetal deaths during the period under study is presented in table 4. Here a comparison is made with the annual fetal mortality occurring in this hospital from any cause and that associated with cesarean section. In every instance it will be noted that cesarean section was associated with the greater infant mortality.

The type of anesthesia employed and the agent used in each case in the study is found in table 5. It will be evident that over 50 per cent of the patients had spinal anesthesia and the next largest group received inhalation anesthesia using cyclopropane alone or in combination with other agents. The possible adverse effect of cyclopropane on 12 infants in the study will require further analysis.

TABLE 1. *Data on fetal deaths associated with cesarean section, 1951 to 1956*

Case number	Age	Gravida	Para	Weeks pregnant	Fetal weight	Reason for cesarean section	Anesthesia	Cause of fetal death
1	31	4	3	31	2-15¼	Toxemia with abruptio placentae	Cyclopropane	Stillborn
2	29	6	3	40	5-0	Repeat	Pontocaine Hydrochloride spinal	Atelectasis
3	35	3	2	36	6-7¾	Abruptio placentae	Cyclopropane	Premature separation
4	31	10	6	38	4-14½	Compound presentation	Spinal	Asphyxia
5	24	3	2	32	2-14	Toxemia	Spinal	Toxemia
6	26	3	2	32	3-7¾	Repeat	Cyclopropane	Prematurity
7	28	3	2	42	6-7	Transverse presentation	Cyclopropane	Stillborn
8	18	1	0	32	2-13½	Eclampsia	Cyclopropane	Atelectasis
9	18	2	0	41	6-1	Abruptio placentae	Cyclopropane and nitrous oxide	Stillborn
10	24	2	1	40	6-15½	Prolapsed cord	Cyclopropane	Asphyxia
11	19	1	0	32	2-8	Toxemia	Spinal	Atelectasis
12	23	3	2	40	5-9	Repeat	Spinal	Atelectasis
13	25	8	7	32	5-2½	Repeat premature labor	Spinal	Atelectasis
14	20	1	0	24	1-0	Diabetes	Local	Stillborn
15	16	1	0	33	3-4	Abruptio placentae	Spinal	Prematurity
16	21	1	0	35	4-6	Abruptio placentae	Cyclopropane	Stillborn
17	18	2	1	40	7-7¼	Diabetes	Spinal	Atelectasis
18	18	1	0	43	3-3½	Toxemia	Spinal	Atelectasis
19	19	1	0	26	1-0	Toxemia	Local	Atelectasis
20	21	3	2	38	5-14	Repeat	Spinal	Atelectasis
21	35	9	8	39	6-3½	Repeat abruptio placentae	Spinal	Atelectasis

TABLE 1. *Data on fetal deaths associated with cesarean section, 1951 to 1956*—Continued

Case number	Age	Gravida	Para	Weeks pregnant	Fetal weight	Reason for cesarean section	Anesthesia	Cause of fetal death
22	25	4	0	42	6-9¾	Cephalopelvic disproportion	Spinal	Atelectasis
23	28	2	1	41	6-2½	Repeat	Spinal	Atelectasis
24	43	1	0	39	2-14½	Toxemia	Spinal	Atelectasis
25	30	2	1	32	2-2	Placenta previa	Spinal	Stillborn
26	22	1	0	31	3-4	Gunshot wound	None	Prematurity
27	22	2	1	30	2-8	Placenta previa	Pentothal Sodium	Atelectasis
28	32	2	1	26	1-15	Abruptio placentae	Spinal	Stillborn
29	19	3	2	37	6-12	Repeat	Spinal	Atelectasis
30	18	2	1	40	4-15	Repeat	Spinal	Atelectasis
31	30	6	2	40	7-14¾	Placenta previa	Cyclopropane	Atelectasis
32	21	1	0	32	8-5¼	Placenta previa	Spinal	Stillborn
33	21	1	0	32	3-7½	Placenta previa	Spinal	Erythroblastosis
34	25	1	0	40	8-0	Cephalopelvic disproportion and toxemia	Local	Pneumonia
35	36	5	3	29	4-1¾	Repeat abruptio placentae	Spinal	Atelectasis
36	35	2	1	40	5-13	Repeat	Spinal	Hyaline membrane
37	23	7	3	33	3-0	Placenta previa twins	Cyclopropane and Pentothal Sodium	Prematurity
37	23	7	3	33	2-8			Premature stillborn
38	27	4	3	38	3-12	Prolapsed cord twins	Spinal	Premature 2d twin
39	23	3	2	40	6-10	Placenta previa	Nitrous oxide, ether, and oxygen	Multiple congenital abnormalities
40	21	3	2	37	6-14	Repeat	Spinal	Pneumonia and lung abscess
41	20	3	2	33	3-4	Placenta previa	Local cyclopropane	Prematurity
42	30	5	4	39	6-11½	Repeat	Cyclopropane	Pulmonary hemorrhage

TABLE 2. *Indications for cesarean section and associated perinatal mortality*

Indication for cesarean section	Total		Fetal deaths	
	Number	Per cent	Number	Per cent
Previous section	288	51.7	11	2.6
Fetal pelvic disproportion	96	17.3	1	1.0
Preeclampsia—eclampsia without abruptio placentae	62	11.2	7	11.0
Placenta previa	36	6.7	9	25.0
Malpresentation	30	5.4	2	6.6
Prolapsed cord	23	4.1	2	8.7
Abruptio placentae	10	1.8	8	80.0
Diabetes mellitus	4	0.7	2	50.0
Previous myomectomy	2	0.4	-	-
Pelvic tumors	2	0.3	-	-
Congenital hip deformity	1	0.2	-	-
Vaginal stenosis	1	0.1	-	-
Gunshot wound	1	0.1	1	100.0
Total	556	100.0	42	7.72

TABLE 3. *Comparison of perinatal mortality associated with cesarean section during period studied with accumulated published reports of incidence of fetal mortality associated with cesarean section*

Year	Number of deliveries	Cesarean sections			
		Number	Per cent	Fetal mortality	
				Number	Per cent
1951*	2,665	70	2.63	4	5.7
1952	4,159	102	2.45	6	5.9
1953	4,302	86	2.00	10	11.6
1954	4,638	79	1.71	11	13.8
1955	4,151	99	2.37	4	4.0
1956	5,752	120	2.08	8	6.7
Total	25,667	556	2.16	43	7.72
1907-1951[1]	1,146,211	46,038	4.02	1,877	6.89

*April through December.

TABLE 4. *Comparison of total perinatal mortality during period studied with that associated with cesarean section*

Year	Stillborn		Cesarean section stillborn		Neonatal deaths		Cesarean section neonatal deaths		Cesarean section premature deaths	Cesarean section term deaths
	Number	Per cent	Number	Per cent	Number	Per cent	Number	Per cent		
1951	29	1.09	1	1.4	44	1.68	3	4.3	2	2
1952	52	1.25	2	2.0	92	2.21	4	4.0	3	3
1953	49	1.14	2	2.3	78	1.82	8	9.2	6	4
1954	42	0.91	2	2.5	70	1.51	9	11.4	6	5
1955	51	1.2	1	1.0	82	2.0	3	3.0	2	2
1956	79	1.36	1	0.8	83	1.43	7	5.8	4	4
Total	302	1.2	9	1.6	449	1.7	34	6.1	23	20

TABLE 5. *Type of anesthesia and anesthetic agent used in the 41 cases of fetal death where anesthesia was employed**

Indications for cesarean section	Type of anesthesia and anesthesic agent					Total
	Regional		Intravenous	Inhalation		
	Spinal pontocaine	Local procaine	Pentothal	N_2O-O_2 ether	Cyclopropane	
Previous section	9				2	11
Cephalopelvic disproportion	1					1
Pregnancy toxemia without abruptio placentae	4	2			1	7
Placenta previa	3		1	1	3	8
Abruptio placentae	4				4	8
Malpresentation	1				1	2
Prolapsed cord	1				1	2
Diabetes mellitus	1	1				2
Total	24	3	1	1	12	41

*This table accounts for only one death (case No. 37 in table 1).

DISCUSSION

With the increasing safety of the cesarean section operation from the maternal point of view, nationally there has been a steady increase in its use in complicated cases. But all too often, abdominal delivery has not resulted in a viable baby. Undoubtedly the indications for the cesarean operation have materially increased the fetal mortality in certain instances.

However, there are a considerable number of infants lost simply because of poor timing, the operation being performed either too early or too late. Of the 556 cesarean sections performed during the period under investigation, only 513 infants survived the neonatal period, making the fetal loss 7.72 per cent, while the gross incidence of fetal loss for all deliveries was 2.81 per cent during the same period at this hospital.

A study of table 1 will reveal the individual cause of death of each infant delivered by cesarean section in the study. Over half of the total infants expiring after section weighed less than 5 pounds. Abruptio placentae, Jiabetes mellitus, and placenta previa in that order accounted for a total of 19 infants' deaths. This is in accord with other reported series.[4,5] Eleven infants died incident to repeat cesarean section and, of these, six were under 6 pounds in weight. This bears witness to the common error of operating before roentgenographic evidence of maturity is demonstrable in the infant. Since July 1954 a more careful appraisal of fetal age has been attempted in all cases prior to carrying out elective cesarean section. Five infants died following repeat cesarean section during this period, but only one infant died as a result of prematurity.

Perhaps one of the reasons for the noticeable reduction in fetal mortality during this period was the initiation of the policy of carrying certain preeclamptic patients closer to term with the aid of antihypertensives and not resorting to immediate induction or surgical delivery without giving due consideration to the state of viability of the fetus. Also more emphasis has been placed on the use of roentgenography as an aid in determining fetal age as described by Adams.[7]

An analysis of the type of anesthesia and agent used in respect to the resultant fetal mortality revealed certain interesting facts. Two of 11 repeat sections had cyclopropane anesthesia, and both infants died in the neonatal period. One was term and the other premature. Four patients with abruptio placentae and three with with placenta previa received cyclopropane anesthesia. Three stillbirths and one neonatal death resulted in the abruptio placentae group, and three neonatal deaths in the placenta previa group. One section for placenta previa was performed in the case of a twin pregnancy at 33 weeks of gestation. Certainly in view of several studies[8-12] on the adverse effect of general anesthesia, and cyclopropane in particular, on the oxygen-carrying capacity and oxygen-utilization rate in the infants' circulation it seems reasonable to conclude that the fetal outcome in the aforementioned cases might have been different if local infiltration anesthesia had been used.

A comparison of the fetal mortality following cesarean section to that following vaginal delivery is, at best, difficult and inaccurate because the two groups of patients are categorically

different. Certain patients developing specific obstetric complications in the last trimester are likely to be delivered by cesarean section; however, these same complications probably would place the infants in jeopardy and lead to an increased fetal loss if they were delivered vaginally. Perhaps even more would have died if they had all been delivered vaginally. It would be of considerable interest to know the actual number of infant lives saved by the cesarean operation, but this can only be estimated.

SUMMARY AND CONCLUSIONS

In a study of all infant deaths associated with cesarean sections performed at a naval hospital during the period 1 April 1951 through 31 December 1956, particular emphasis was placed on the stage of gestation, type of anesthesia and agent used, fetal weight, and indication for section at the time of operation as possible causative factors in the production of increased fetal wastage.

While the maternal mortality rate following cesarean section has been reduced to less than 1 per cent in most institutions, this study reveals that at this hospital the fetal loss following cesarean section during the period studied is about 7.72 per cent, well more than twice the fetal mortality following vaginal delivery. Further analysis revealed that over half of the infants lost following operation weighed less than 5 pounds irregardless of the indication for surgery.

Exceptional care must be taken in choosing cases for cesarean section. Every effort should be made to avoid prematurity, and in this respect the fetal size and gestational age should be paramount in deciding the time an elective cesarean section is to be performed. The choice of anesthesia for a given indication is also considered extremely important to the fetal outcome.[12] Inhalation anesthesia using cyclopropane or other gaseous depressants should not be utilized in any instance where the fetus has already been precipitated into an hypoxic state.[8-12] Conservative management of placenta previa is recommended as a means of decreasing the incidence of prematurity with its resultant high perinatal mortality in cases that eventually are delivered by cesarean section. It also is urged that a reasonable effort be made to carry certain severe preeclampsia patients closer to term with the aid of antihypertensives, as an additional means of decreasing fetal wastage in cases requiring cesarean section for delivery.

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POLIOMYELITIS VACCINE AND IMMUNITY

"The amount of virus antigen injected is the principal determinant of the intensity of the immune response. This is reflected in the level of antibody induced and/or in the degree of immunologic hyperreactivity effected. Although antibody, at demonstrable levels, tends to persist for long periods, it has also been observed that immunologic hyperreactivity continues, even in those cases in which antibody has declined to nonmeasurable levels. The indications are that immunity to paralysis is mediated not only through existing antibody in the circulating blood but through the mechanism of immunologic hyperreactivity that calls forth antibody sufficiently rapidly, after exposure, to intercept invasion of the central nervous system even though pharyngeal or intestinal infection may have occurred."

—JONAS E. SALK, M. D.
in *Journal of American Medical Association*
p. 1459, Dec. 15, 1956

POTABLE WATER ON SUBMARINES

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CONTAMINATION of potable water with sewage, polluted water, or other nonpotable liquid presents a perennial hazard in public health. This is particularly so aboard a ship, and is acutely true within a submarine. Mount and Floyd[1] reported an outbreak of 326 cases of *Shigella flexneri III* aboard a cruiser, centering around a cross-connection between potable water and salt water systems in a dishwashing machine. Salt water outlets in food service spaces have since been ordered out by regulation. Cheever[2] reported the survival of shigella in sea water for as long as 76 hours, emphasizing the danger of contamination of equipment by harbor water. While the purpose of this article is to point up sources of trouble in the potable water supply of submarines and to suggest possible methods of correction, many useful parallels may be drawn between problems of submarines and those of surface vessels and shore installations.

A study of the potable water systems of submarines in a typical submarine squadron was initiated in 1955 as a result of finding contaminated water in potable water tanks during routine quarterly checks. In an effort to determine all possible causes for this contamination, procedures and installations were discovered that represent potential hazards in all submarine squadrons.

MATERIALS AND METHODS

The study concerned the following salient features: (1) water sources, (2) means of transfer, (3) water in tanks, (4) tank arrangements, (5) venting systems, (6) possible cross-connections with nonpotable systems, (7) laboratory studies, and (8) malfunction reports. Diagrams and photographs were made to illustrate possible cross-connections, improper venting arrangements and potable water hose stowage, and certain water sanitation deficiencies.

A concentrated survey of the potable water tanks aboard a representative group of submarines was undertaken in an attempt

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to correlate nonpotable water with the deficiencies mentioned above. Standard methods[3] for total bacterial count and coliform counts were employed. The same methods were used to study the water hoses, in which case samples of water were obtained from the hose as it first came through and after specified periods of time.

RESULTS

The submarines were divided according to building yard into two major groups. Those from one yard had 22 of 254 tanks (8.7 per cent) positive for coliform organisms over a five-month-test period. In the other group only 2 of 107 tanks (1.9 per cent) were positive.

The following deficiencies were noted in the potable water systems, equipment, and handling procedures[4-7] aboard the submarines studied:

Inadequate Air Breaks in Vents From Potable Water Tanks. The vents on some tanks on all types of submarines had inadequate air breaks. The air break is essential to prevent the back flow of liquid or spray into the potable water system (figs. 1 and 2).

Common Bulkheads Between Potable and Nonpotable Liquid Tanks. The number 1 potable water tanks on all submarines studied had a common pressure bulkhead with sanitary tank number 1. On some submarines the number 2 sanitary tank apposed number 4 potable water tank.

Common Bulkhead With Sea Water. All potable water tanks had a common bulkhead (the pressure hull) with nonpotable liquid—the water in which the submarine was floating. This is a major discrepancy common to many other types of vessels.

Scuttle Butts Constructed So That the Drain Line Enclosed the Inlet Line and Fittings. Several submarines were found with types of scuttle butts (drinking fountains) which allowed this possibility of cross-connection between potable and nonpotable systems.

Direct Connections Between Potable Water Systems and Sanitary Systems. While it was recognized that due to the inherent complexity of the operating systems of a submarine almost any type of cross-connection between systems was possible, consideration was given only to the more probable causes of contamination. The scuttle butt mentioned above was one; the other was a drain directly to sanitary tank number 2 from the hot water tank in the galley of one group of submarines. This was evident on all blueprints, but in most instances it had been capped off.

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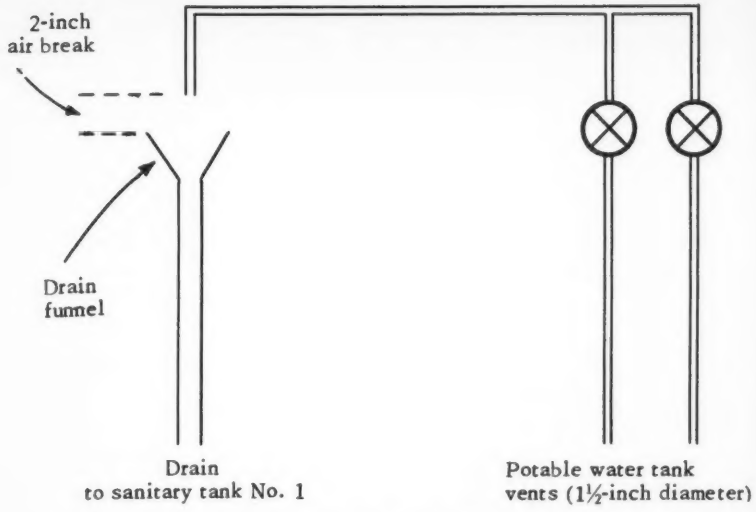

Figure 1. Proper venting of potable water tanks aboard submarines.

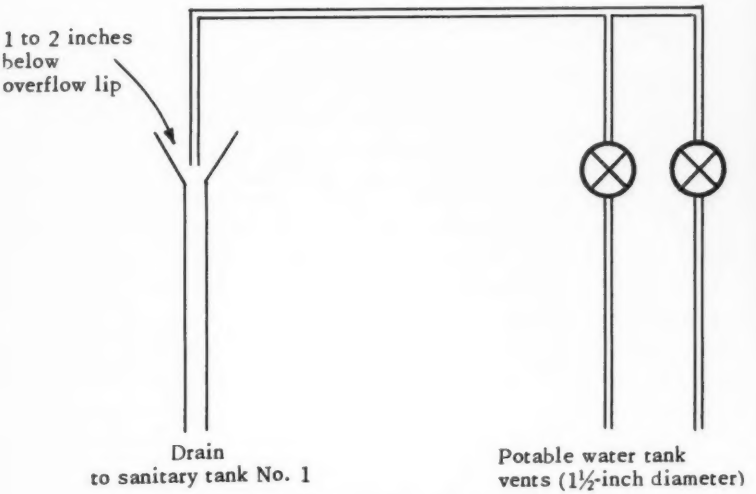

Figure 2. Improper venting of potable water tanks of submarines.

Access Hatch in the Top of the Potable Water Tank Forming Part of a Deck. In many submarines of both groups, this deficiency occurred; however, in most cases the hatch was well sealed and protected by a false cover. The results of laboratory tests for

contamination were inconclusive. Nevertheless, a serious hazard was discovered on one type of one group of boats. Where sanitary tank number 2 lay alongside potable water tank number 4, the access hatch to the potable water tank was in the shower deck. The contents of the sanitary tank, under certain diving conditions, backed up into the shower, creating a serious hazard by covering the potable water tank hatch with sewage resulting in possible back flow or aerosol through the water tank vent (fig. 3).

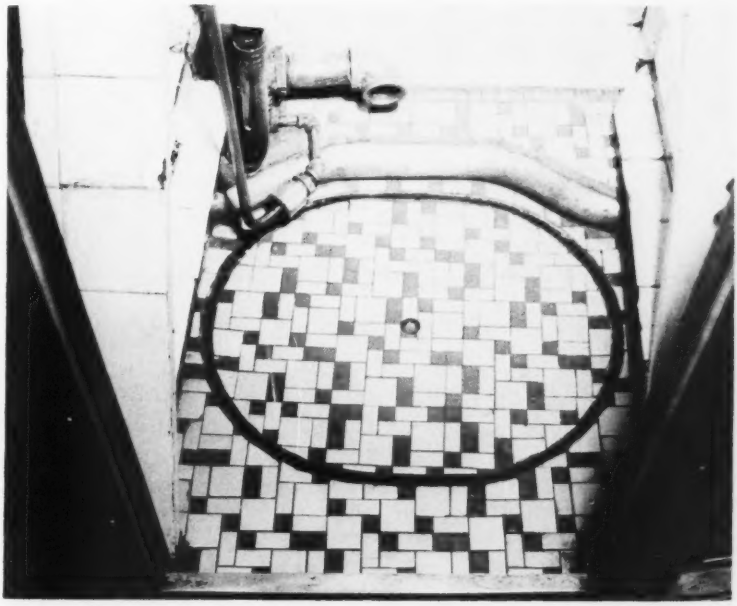

Figure 3. Vent for potable water tank number 4 and access hatch to tank in crew's shower.

Improper Stowage of Water Hoses. Stowage of water hoses varied greatly. Some hoses were found in the relatively clean environment of dry stores. Others were in the well in the forward torpedo room. Still others were stowed topside in various places exposed to weather and spray. None were capped, and few were clean. (figs. 4-6).

Inadequate Flushing of Water Hoses Before Use. Many times it was found that persons connecting water hoses did not flush them adequately, if at all, before filling the tanks. It was found that flushing for 2-3 minutes was required to clean the hoses sufficiently to obtain a minimal bacterial count (fig. 7).

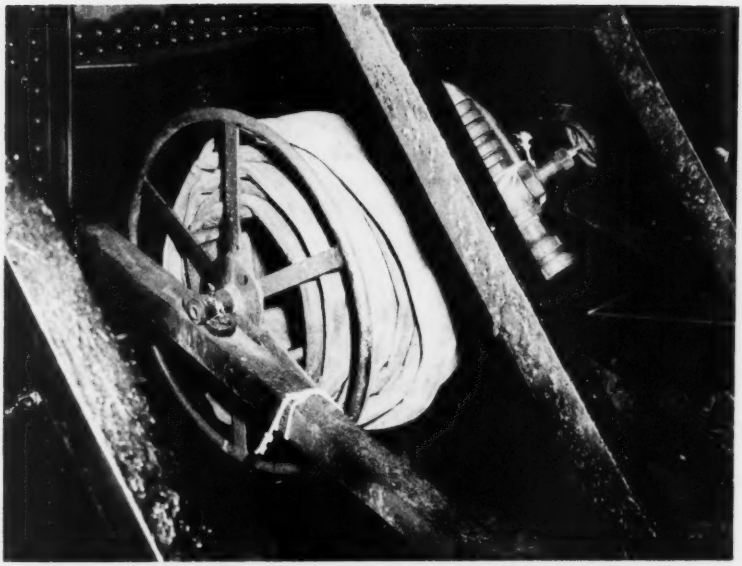

Figure 4. Improper stowage of potable water hose by forward escape trunk in superstructure.

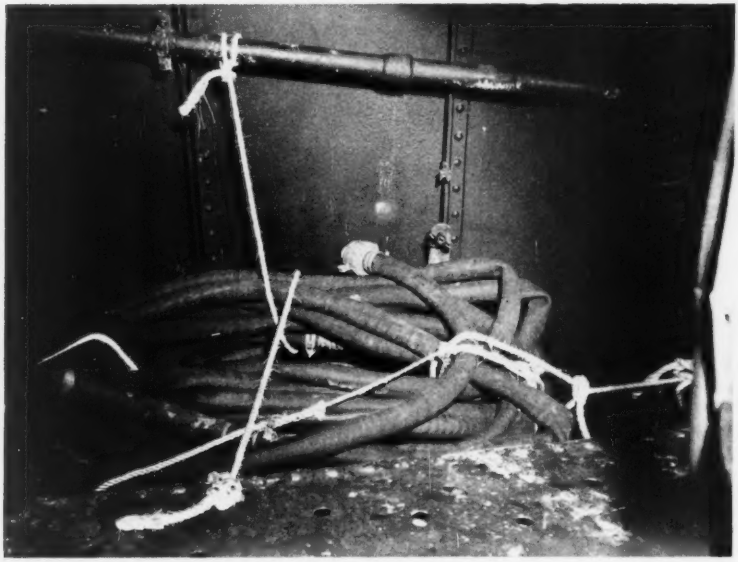

Figure 5. Improper stowage of potable water hose outside pressure hull near forward escape trunk. Improper type hose for potable water.

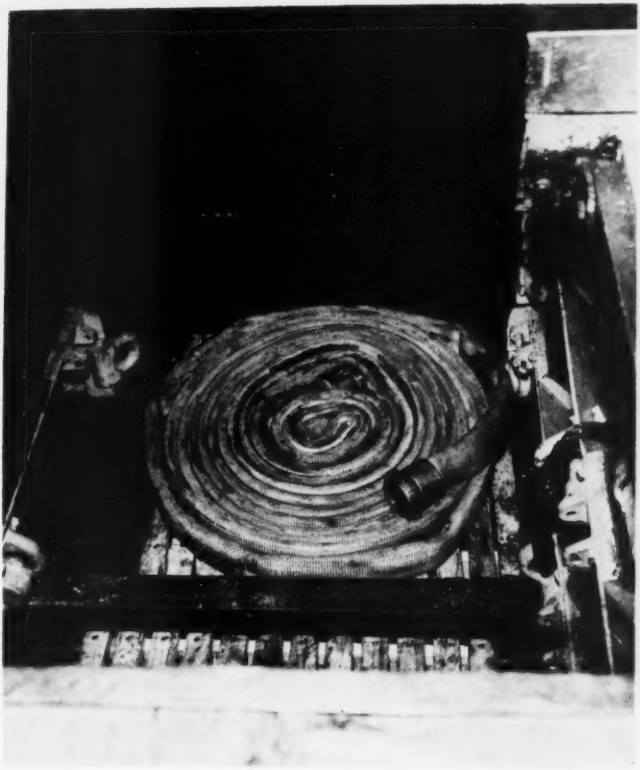

Figure 6. Improper stowage of potable water hose in well under forward torpedo room.

DISCUSSION

Certain of the inadequacies in potable water systems and water handling aboard submarines were of a major nature. Why did the submarines from one shipyard have a higher percentage of contamination than those from another shipyard? The significance of this situation and the reasons for it called for further, more specialized study. Tank placement in opposition to Public Health standards certainly deserves investigation as to the pros and cons of this design feature. Access to tanks is another major design feature that warrants examination as to feasible methods of change in certain instances.

The important considerations of the moment, however, are not these major decisions, but are the actions that can be taken immediately by ship's personnel to improve the potable water

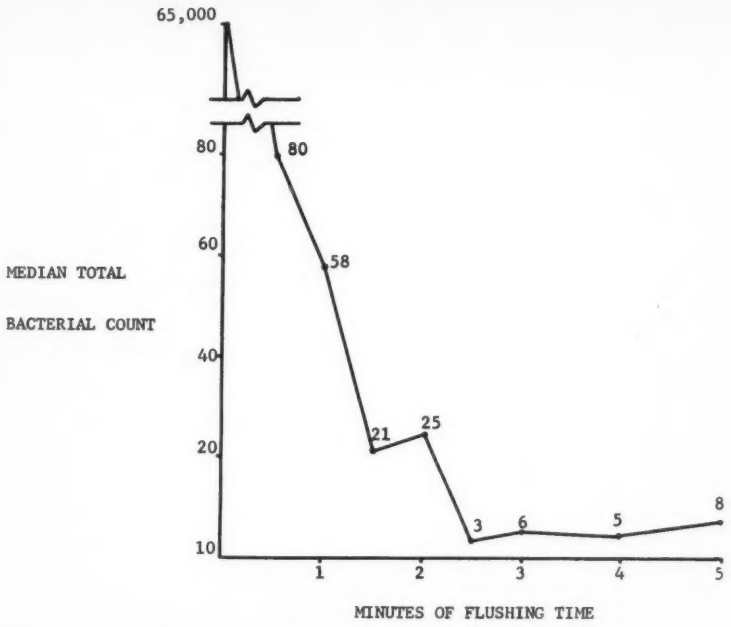

Figure 7. Effect of flushing time on median total bacterial counts per ml sample on six water hoses.

supply and protect the crew's health. The air break on the vents to the potable water tanks can be made adequate with a minimum of pipe-fitting ability. The requirement is that the air break between the opening of the vent and the top edge of the funnel or trough below it must be twice the diameter of the vent line. Therefore, a 1½-inch diameter vent pipe should have 3 inches between it and the drain below it. A simple shortening or lengthening of one or two pipes can remedy this situation easily. It was discovered during the study that in many instances an inadequate air break had resulted from improper reinstallation after some ship repair or alteration.

Most of the scuttle butts aboard submarines were of a satisfactory type, but a few were of the improper type. Installation of a free-draining model would be a simple and inexpensive matter.

Hose stowage, care, and handling is an important problem. Hoses should be kept clean at all times and periodically disinfected with chlorine solution. The frequency of chlorination is determined by usage and accidental contamination. Whenever there is question about the sanitation of a hose, chlorinate it;

otherwise, in normal usage, chlorinate water hoses at the very least once every three months. Keep them clean by capping both ends when not in use. Water hoses must not be dragged through the harbor water whether they are capped or not. If an accident such as this occurs, disinfect the hose with chlorine solution before it is used. Flush the potable water hose before each use. Three minutes flushing is adequate under normal conditions.

Stow potable water hoses, capped, in a clean, dry place, Never stow them topside. Submarines are crowded, but space for a clean set of water hoses can be found. When in a major navy port, find out if specialized workers are designated to make water connections for the ship. Use them, even if it requires a short wait.

Direct connections between potable and nonpotable systems such as those mentioned above should be determined and remedied. This is a quick job for any auxiliaryman. Access hatches to potable water tanks should be inspected periodically for tightness and should be cleaned of any debris that has collected on them.

Finally, consider testing and chlorinating the water that goes into the potable water tanks. Nearly 100 per cent of the time the water obtained from an approved source in the continental limits of the United States is satisfactory when it gets to the ship. These studies have shown, however, that there are many ways the water can become contaminated after this point. The percentage of contaminated tanks discovered in this investigation points up the necessity for bacteriologic testing of the water in the tanks at least on a quarterly basis. Furthermore, normal chlorination of water never hurt anything, and it is a cheap safety factor. From unknown continental United States sources and all foreign sources chlorinate to at least 2.0 parts per million residual chlorine after contact time of 30 minutes.

Water-borne disease can disable a submarine or seriously impair its fighting readiness. The same applies to ships and shore installations. The discrepancies and frequency of contamination observed, therefore, make it mandatory to correct all deficiencies in equipment and to handle potable water properly.

SUMMARY

Study of the potable water systems of submarines in a typical squadron disclosed discrepancies both in equipment and in procedures. Positive tests for coliform organisms were obtained from 8.7 per cent of 254 tanks in submarines from one shipyard but from only 1.9 per cent of 107 tanks in submarines from another shipyard, suggesting a relation to type of construction and

nature of equipment. Of 8 potential sources of contamination observed, 6 had to do with equipment or construction and 2 with procedure. The results indicate need for (1) emphasis on proper handling procedures, (2) a regular check of potable water tanks for contamination, and (3) a more complete and detailed study of causes of contamination of potable water tanks aboard submarines.

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RESPONSIBILITY OF AUTHORSHIP

"Publication of favorable results carries the moral obligation of immediate rectification or disavowal if the recommendations later prove to be of little or no value. If this is not done, many physicians, attempting conscientiously to keep up with the latest developments in medicine, may continue to follow the views in the original paper long after its author or others have decided that the concept has no merit. This is particularly true among physicians out in the grass roots, who rely more on the journals than do their city cousins, and who, with reason, are greatly influenced by optimistic reports coming out of the large research institutions."

—EDITORIAL
Massachusetts Physician,
pp. 183-184, May 1957

Clinicopathologic Conference

U. S. Air Force Hospital, Parks Air Force Base, Calif.*

Fever, Convulsions, Coma

Summary of Clinical History. This 2½-year-old, white female child was admitted to this hospital after having been ill with a respiratory infection for over one week. Seven days, and again five days prior to admission, she had been given penicillin by injection. One day before admission she had been given vitamin B for vomiting. Therapy with Aureomycin Hydrochloride (brand of chlortetracycline hydrochloride) was started at that time.

During the 24 hours before admission she had a high temperature and had been delirious. She had complained of pain in the right arm a few days before admission.

Physical Examination. On admission her rectal temperature was 105°F. She appeared acutely ill and had a "glassy stare." The right eardrum was dull and bulging with exudate behind it. The left ear was normal. The throat was injected. There were fine rales over both bases, more marked on the left. No dullness was noted. The heart beat was rapid (110 per min) but regular. No murmurs were heard. The abdomen, genitalia, and extremities were normal.

Laboratory Studies. On admission the red blood cells numbered 4,560,000 per μl and the hemoglobin was 12.5 grams per 100 ml. The white blood cells were 6,550 per μl with 4 per cent meta-

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*Col. John W. Linfesty, USAF (MC), Commander. From the Laboratory Service, Maj. Robert E. Pierce, USAF (MC), Chief.

myelocytes, 17 per cent band forms, 61 per cent neutrophils, 15 per cent lymphocytes, and 3 per cent monocytes. The urine contained a few epithelial cells.

Course in Hospital. The following medications were ordered on admission: Auralgan ear drops in both ears, four times daily; 0.25 per cent solution of Neo-synephrine Hydrochloride (brand of phenylephrine hydrochloride) as nose drops, four times daily; steam inhalations; Chloromycetin Palmitate (brand of chloramphenicol palmitate); Linctus Compound as needed for cough; diet, as tolerated, with forced fluid intake; sponge baths and 200 mg of aspirin as needed for fever of 103.5°F or above; and 0.6 ml of ABDEC (multivitamin preparation) twice daily.

The lowest temperature the day of admission was 101.8°F. It was 103 to 104.6°F for most of the day and remained elevated the following day. A roentgenogram of the chest revealed bilateral bronchopneumonia. White blood cells now numbered 4,650 per μl, with 18 per cent band forms, 33 per cent neutrophils, 40 per cent lymphocytes, and 9 per cent monocytes. Brucella, *Salmonella typhosa, Salmonella paratyphosa,* and cold agglutination tests were negative. Stool cultures revealed no pathogenic organisms.

The day after admission the patient had a convulsion which lasted 3 minutes. An enema of 8 ml of paraldehyde in mineral oil was given, part of it being retained. Following sponge baths, administration of aspirin, and a small enema, her temperature fell to 99.8°F.

At 0210 on the second hospital day the child had a convulsion which persisted for over one hour. Paraldehyde was given by rectum but was expelled with a green, liquid stool. At 0240 and again at 0255, 200 mg of Luminal Sodium (brand of phenobarbital sodium) was given. Her temperature at 0255 was 106.4°F. The convulsions continued and ether was given by mask with only temporary relief. At 0345 a lumbar puncture was performed, after which the convulsion ceased although the patient remained unconscious. The spinal fluid was clear and contained 1 lymphocyte per μl. The spinal fluid sugar was 113 mg per 100 ml; total protein, 24 mg per 100 ml; chlorides, 620 mg per 100 ml; and culture, negative. One gram of Gantrisin (brand of sulfisoxazole) in 100 ml of water, 5 per cent dextrose in water, and 130 ml of blood were given through a venous cutdown.

Convulsive movements persisted intermittently until noon. At 1400 the patient's color was poor and her pulse was weak. Suction was applied and a mucus plug was removed. The child's color improved following this. Her temperature was 98.8°F and remained below 100°F the remainder of the day. Gantrisin was given twice daily, and 75 ml of blood and 40 units of Acthar gel (brand of corticotropin) were given.

The patient's condition remained about the same on the third hospital day. The highest temperature was 102.6°F at 1400. Previous medications were continued, 100 ml of blood was given, and intramuscular injections of 250 mg of Chloromycetin were given twice daily. On this day her face was edematous.

She improved slowly over the next few days. On the fifth hospital day Varco formula was begun by tube. The child's temperature ranged from 98.6° to 100°F. She remained comatose with occasional stirring and groaning. Her stools were meconium-like. On the sixth hospital day the liver was palpable 4 fingers-breadth below the right costal margin. There was roentgenographic evidence still of bilateral bronchopneumonia. There was no cardiac enlargement. Urine was checked daily for sulfa crystals, but none was found.

On the seventh hospital day the liver edge was below the umbilicus. The patient opened her eyes and moved but remained on the verge of consciousness. Her temperature remained below 100°F. One-half unit of plasma was given every 12 hours. Her temperature spiked to 106°F on the ninth day, but dropped rapidly. The liver gradually decreased in size. She vomited small amounts of what apparently was old blood. Her temperature then began climbing to 105°F. On the eleventh day Gantrisin was discontinued and 250 mg of Terramycin Hydrochloride (brand of oxytetracycline hydrochloride) was given every 12 hours. She remained semicomatose. Stools remained meconium-like and rales continued in the lungs. The white blood cell count remained low, with a high of 11,100 per μl on the eleventh day, with 12 per cent band forms, 58 per cent neutrophils, 28 per cent lymphocytes, and 2 per cent monocytes. The child appeared spastic. Throat culture taken on the twelfth day revealed a "yeast-like fungus."

Early the sixteenth day the patient stopped breathing but started again with artificial respiration. The lungs contained rhonchi. She became stuporous, and oxygen was necessary. A lumbar puncture on that day disclosed clear colorless fluid with an initial pressure of 224 mm of water. About 15 ml of fluid was removed, following which the pressure was 90 mm of water. The spinal fluid contained 1 lymphocyte; the sugar was 93 mg per 100 ml; total protein, 18 mg per 100 ml; chlorides, 560 mg per 100 ml; and the Pandy test was negative. The patient was more edematous and her abdomen was distended. Her respirations became weaker and shallow, and cyanosis increased. The patient died on the seventeenth hospital day.

DISCUSSION

Doctor Barkin:* This case is that of a 2½-year-old female child who had a respiratory infection for over a week and was admitted with a high fever. She had been delirious for approximately 24 hours before admission. A week before admission she had been given two injections of penicillin, which had very little effect on the fever. She also vomited on the day before admission and had some pain in her right arm. There is no other mention of this symptom and it was not severe. Aureomycin was started and apparently discontinued the same day.

When she was admitted she had a temperature of 105°F and appeared acutely ill. This indicates to me a bacterial infection. Many children that we see in the clinic up to 3 or 4 years of age may have a temperature of 103° to 104°F, and there is one child I am thinking of who had a temperature of 107° for a week, with nothing more that we could find than an upper respiratory tract infection and a normal white blood cell count and differential. When she came in she would run up and down the hall and appear fine. This is a big differential point with children. If they look fine, it is usually a viral infection. If they appear acutely ill, it is usually bacterial.

It was described that she was delirious. This is unusual even with a 105°F temperature unless there has been some evidence of convulsive-like movements, so this is a pretty sick child.

The right eardrum was dull and bulging, and had an exudate behind it. With a purulent otitis the organisms are usually hemolytic streptococci, pneumococci, or staphylococci, and should she have had an ear infection when she was given the penicillin you would have expected some improvement of the ear. If she had a purulent infection for a week, you would have expected the bulging drum to have perforated. So this apparently was a real acute otitis. Usually if some condition is present, such as rhinitis or pharyngitis, enough to give an infection of one ear, and if it has been going on for several days, both ears would be involved. Here the left ear was reported as normal.

She had bronchopneumonia. Her heart rate was 110 per minute. That is a normal heart rate for a child of 2½ years with *no fever.* With a temperature of 105° one would expect a heart rate of 160 to 170. So this is a bradycardia.

The extremities were found to be normal, and there was no tenderness of the right arm although she had complained of pain in it several days before. Blood examination showed 12.5 grams of hemoglobin. This is probably still more evidence that this is an acute affair.

She was apparently well up until a week prior to admission and the white blood cell count was 6,550 per μl although there was a

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*Capt. Gilbert D. Barkin, USAF (MC), Pediatric Service.

definite shift to the left in the differential. The urine was essentially normal.

Auralgan drops were put in both ears (apparently both ears were hurting the child, even though the left was described as normal). She had a cold which is the primer of most ear infections. Chloromycetin Palmitate was given. The antibiotic therapy is quite varied here with Aureomycin started the day before. Sponge baths and aspirin were given to lower the temperature.

The temperature on the day of arrival varied from 101.8° to 104.6°F and it remained elevated the following day. Bronchopneumonia was confirmed by roentgenography. The repeat count still showed a low white count and there was an increase in lymphocytes and in monocytes.

A cold agglutination test was negative. Usually it is the second week before cold agglutinations become positive. Brucellosis was considered. This disease is not as chronic as brucella infection. The child was apparently sick throughout the day, instead of appearing weak in the morning and better in the afternoon. An enlargement of the liver and spleen may occur in brucellosis, and there may be an encephalitis, which is the type of picture that the child had later on. Brucella agglutination usually becomes positive after about 10 days. So we are at the point here where it may or may not be positive.

Salmonella typhosa and *paratyphosa*—I think there are a number of things which go along with typhoid fever and I'll discuss this condition a little later. The agglutinations, according to the curve, are approximately 30 per cent positive at the time when the blood was drawn from this patient. Of course paratyphoid can produce a similar picture, although it is rather rare in the States.

The temperature rose to 105°F and the child developed a convulsion. Apparently it wasn't until the temperature was lowered to 99.8° that the convulsion stopped, and this appears to have been a febrile convulsion. Paraldehyde was given rectally, and it was noted that the second time paraldehyde was given on the next morning, there was a green, liquid stool. This was probably a result of the irritation of the rectum caused by the paraldehyde.

The child began having convulsions the following morning, the second hospital day. At that time the temperature was up to 106.4°. Luminal, 200 mg, was given in a 15-minute period. Ether by mask didn't help. It wasn't until a lumbar puncture was done that the convulsions ceased. I wonder if the temperature also went down at the time the convulsions ceased? If the lumbar puncture relieved it, you would think of some increase in intracranial pressure. It is very difficult in a 2½-year-old child to measure a spinal fluid pressure and I sympathize fully with the physician who was doing this. If the fever had gone down the convulsions may have stopped because of this

and instead of the lumbar puncture. The spinal fluid appeared clear and the findings in it were perfectly normal.

At this time Gantrisin was given as well as 130 ml of blood, which was a supportive measure. The child had a hemoglobin of 12.5 grams per 100 ml, and this would raise it a little more than a gram. Twenty milliliters of blood per kilogram of body weight increases the hemoglobin 3 grams.

The convulsive movements persisted. The child was aspirated and a plug removed. It was apparently thought that the child was in early shock and Acthar gel was started. Again, a small amount of blood was given for supportive treatment. As to how severe the convulsive movements were on the morning of the second day, it is a little hard to tell. If the child was in status for that hour and a half, perhaps there was serious brain damage, but if this was a matter of individual convulsions with twitchings that continued for that period of time one would not expect the child to suffer any degree of brain damage. One out of 14 children, under the age of three, have convulsions with fever and many of them continue for an hour or more, yet it is unusual to have brain damage.

Gantrisin having been started, now Chloromycetin was started with a dosage of probably about 50 mg per kilogram and some more blood was given.

Her face was edematous after two days of intravenous fluid therapy. The most common difficulty that would cause a child to become edematous is too much salt in the fluid which is given. In order to keep the cutdown open you must keep a flow of at least 6 drops per minute, and that would amount to about 360 ml of fluid. She had previously received 100 ml of blood and this alone would give the amount of salt for her daily requirements. About a gram a day is all the salt a 2-year-old child needs. An accumulation of salt from the other fluids was probably the reason for this sign. The urine was checked daily for sulfa crystals and I imagine that it was checked for albumin, particularly since the patient was edematous.

Two days later it was noted that she had some meconium-like stools. She had convulsed several times and may have bitten her tongue, or her lip, and had enough bleeding there to give a tarry stool *if* this was a tarry stool. The other things that are less common would be a Meckel's diverticulum or the swallowing of a foreign body. Usually you would expect bright-red blood with a Meckel's diverticulum, but it can be dark. A duplication of the bowel, which is usually present in the small intestine, with bleeding from a marginal ulcer could give tarry stools. Of course an ulcer could also give tarry stools. If the paraldehyde had irritated the rectum you would expect any evidence of blood to be brighter. Bleeding from ulcers in the ileum in typhoid fever could produce tarry stools, but it is a lot more uncommon in children than it is in adults.

The temperature was down on the fifth hospital day. In a condition like typhoid fever, which I will discuss later, the temperature is usually elevated for at least a two- to three-week period.

On the following day the liver was suddenly noted to have gone down four fingersbreadth, which indicates heart failure. Roentgenograms showed evidence of bilateral bronchopneumonia. There was no evidence of cardiac enlargement. This is hard to tell in a child and it is hard to evaluate that statement. As to the cause of the heart failure, the child still had the cutdown and an excessive amount of fluids can throw a child into heart failure. I have seen five children thrown into heart failure where it was obviously from fluids. They were usually six months old or younger and 500 ml of fluid in an hour could throw a perfectly normal six-month-old infant into heart failure. But here is a child of 2½ years with kidneys in good condition. Could there have been a congential heart disease? There is no evidence of any murmur and no cardiac enlargement so you would tend to discount those conditions with a large heart and no murmurs such as an aberrant left coronary artery or fibroelastosis. Could this be due to a myocarditis from an infectious process? The pneumonitis could have been quite severe, and typhoid fever could cause a myocarditis.

The following day the temperature spiked to 106°F. This is now about five days during which the child was apparently afebrile, and the heart failure, which I believe the condition is, has subsided to some degree with the liver gradually decreasing in size. I wonder why there is no mention of digitalizing the child, or of oxygen or other therapy.

She then vomited small amounts of apparently old blood. Any blood swallowed during the convulsions five days before certainly would not be expected to remain in the stomach long. Again the possibility of a high ulceration is present. The temperature remained high. The Gantrisin which had been given for a week or more was discontinued and Terramycin was started.

The patient still remained comatose. This is a period of seven or eight days. One thinks now of a progressive central nervous system disease. Rales continued in the lungs. The white count was still low. A child of 2½ years of age is able to respond very well to infection and with a purulent infection you would expect the count to have been high. The child now appeared spastic. This would point to progressive central nervous system disease.

And now the "fly in the ointment": a yeastlike fungus appeared in a throat culture. There are a number of fungus diseases which affect the central nervous system. Torulosis is the most common, but there is also saccharomycosis, oidiomycosis, coccidioidomycosis, blastomycosis, sporotrichosis, and actinomycosis. The symptoms of these usually depend on whether or not a granulomatous process was formed to cause obstructive signs and symptoms, or whether different

portions of the brain are involved. The spinal fluid findings usually are those of a meningitis, particularly with torulosis, with high protein, low sugar, and increased cells. The symptoms are not usually those of an acute infection. There is usually no fever with torulosis, but when there is it is usually only up to 101°F. So this doesn't appear to be a fungus condition.

The following day the patient stopped breathing; the lungs contained rhonchi, and she apparently had pulmonary pathology. The lumbar puncture done that day showed an initial pressure of 224 mm of water. Here is a child who is stuporous so that would be an accurate pressure. The pressure is normal up to 200, this is a little above. Blood chemistry studies again were normal and only one lymphocyte was present. The patient was more edematous and her abdomen was distended. She had been given positive pressure oxygen, which could account for the distension of the abdomen. Then she died of a respiratory condition.

The picture then is that of an encephalopathy. This can occur with glomerulonephritis, but wouldn't be expected to have persisted this long and there would have been abnormal urinary findings. In a child in coma with diabetes the urine would have showed sugar. Lead encephalopathy is something that has to be considered in every child. A child at 2½ years is at the nibbling stage and may have nibbled some of the paint off of her father's shoes if he was a painter. With the respiratory infection the lead may have been mobilized out of the bones into the blood. But central nervous system findings in a child which are severe enough to cause death are usually pretty striking. Usually the pressure is markedly elevated and may be up as high as 900 mm of water, and the protein also is markedly elevated. There is no evidence of this in two taps. Other encephalopathies may be toxic or hemorrhagic and caused by pneumonia, dysentery, typhoid fever, typhus, scarlet fever (occasionally), and brucella.

I should like to talk a little more on typhoid fever. This is a possibility in this child. It produces a demyelinating encephalopathy. The child became spastic, and this may have been what produced a lot of the findings. The stools are not loose, although in a series of 252 cases reported by Holt and McIntosh[1] only one half had diarrhea. Half were found to have rose spots. These are easy to miss. Only 30 per cent of agglutinations are positive at the time that this agglutination was obtained, and this well may have been one of the 70 per cent that aren't positive. You would have expected to find a positive stool culture. The leukopenia and lymphocytosis would go along with typhoid, as would the bradycardia which was present. The meconium-like stool, if this was evidence of ulceration, would go with typhoid fever, and the myocarditis may have been the cause of the heart failure.

As to the most probable diagnosis, we must go back to the ear infection. Here was a bulging drum, and you get a mastoiditis with an

ear of this type, just as you get a sinusitis with a cold. Thus, a brain abscess must be considered. The sugar, chlorides, and proteins are normal; the globulin should have been up, and the blood cell count also would be up.

Doctor Hensler:* I think the possibility of trichinosis might be considered. The child complained of pain in the arm, also the apparent involvement of the gastrointestinal tract, and the myocarditis would go along with this. I don't think that this is a very likely diagnosis, however, but it is something to be considered.

Dr. Barkin's diagnoses:

1. Brain abscess
2. Typhoid fever

PATHOLOGIC FINDINGS

Doctor Pierce: At autopsy the patient was a well-developed, well-nourished, female child appearing of stated age. There was moderate edema of the face and slight pitting edema of the legs. Small amounts of clear brownish fluid were found in the peritoneal and pleural cavities.

The scalp and meninges were generally very edematous. The brain weighed 1,150 grams, and there was marked edema throughout. The gyri were flattened, with narrowing of the sulci. No pressure cone was present. No other changes were evident grossly.

The heart showed no gross changes. There were scattered small areas of hemorrhage beneath the visceral pleura. Both lungs were markedly edematous and congested. There was no gross evidence of consolidation or of a pneumonic process.

The spleen was congested. The liver extended three fingersbreadth below the right costal margin at the midclavicular line. The liver weighted 970 grams. The parenchyma was pale pink and the lobules were grossly very prominent. There was marked edema.

The gastrointestinal tract was essentially normal throughout. No mucosal changes were found in any area. There was no lymphadenopathy.

The kidneys appeared grossly swollen. The right kidney weighed 135 grams, the left weighed 140 grams. The capsules stripped easily, revealing swollen and pale cortical surfaces. Throughout the cortical and medullary portions of both kidneys were many small, white tuberclelike formations measuring from 1 to 1.5 mm in diameter. There was marked edema of both kidneys. The findings were grossly similar to renal tuberculosis. Frozen sections done immediately, however, revealed them to be pyogenic abscesses.

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Microscopic examination of the lungs showed a generalized edema. A few scattered alveoli contained neutrophils, but no significant pneumonic process was found.

Sections of the brain showed generalized edema. Scattered throughout the cerebrum were focal areas of necrosis with leukocytic infiltration (fig. 1). The ganglion cells in some areas showed early ballooning degeneration. A few perivascular hemorrhages were found.

Examination of sections of the myocardium showed a very few small scattered abscesses (fig. 2). No other significant changes were evident.

Microscopic sections of the liver showed the majority of the hepatic cells to contain globules of fat. The cells were swollen and the sinusoids compressed. Mitotic activity was evident. Much granular brown-black pigment, similar to hemosiderin, was noted in the Kupffer cells. The findings in the liver were interpreted as marked fatty degeneration, probably on the basis of a toxic process. No abscesses were found. The gastrointestinal tract, pancreas, spleen, and adrenals were not remarkable on microscopic examination.

The kidneys on microscopic examination showed multiple focal areas of necrosis, some rather large, with large numbers of neutrophils present (fig. 3). A few of the glomeruli showed epithelial cres-

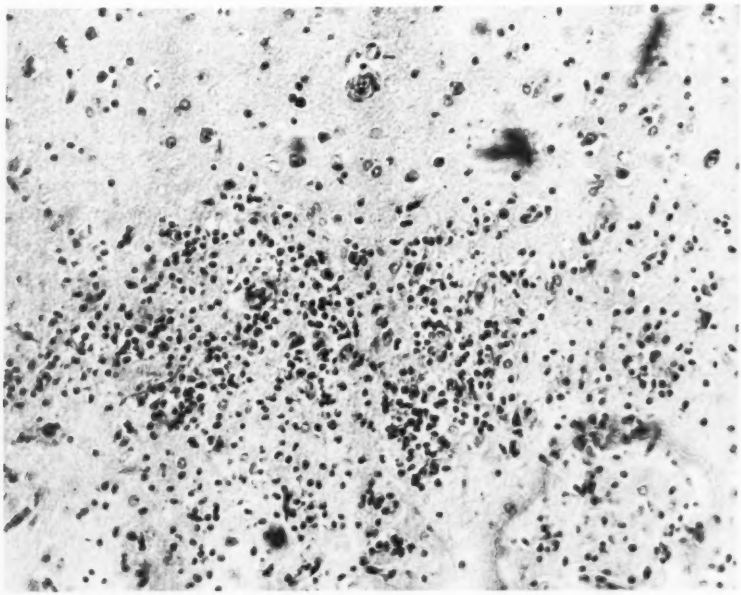

Figure 1. Microabscess in cerebrum. (Hematoxylin-eosin stain, ×50)

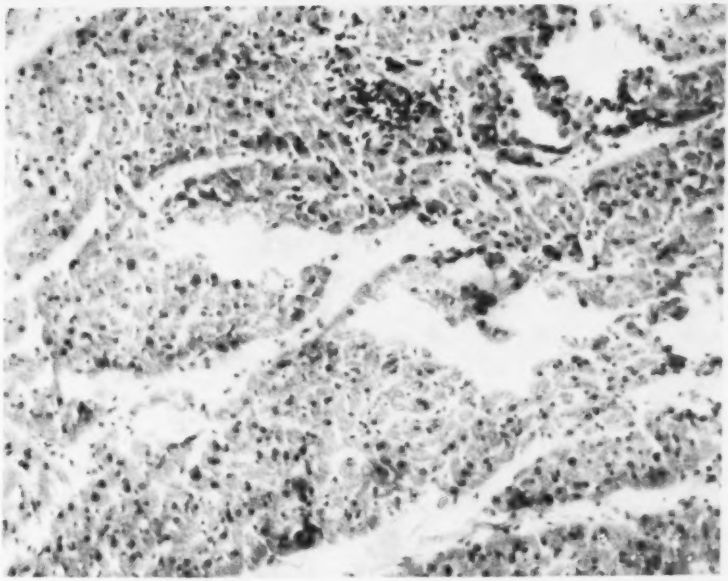

Figure 2. Microabscess in myocardium. (Hematoxylin-eosin stain, ×50)

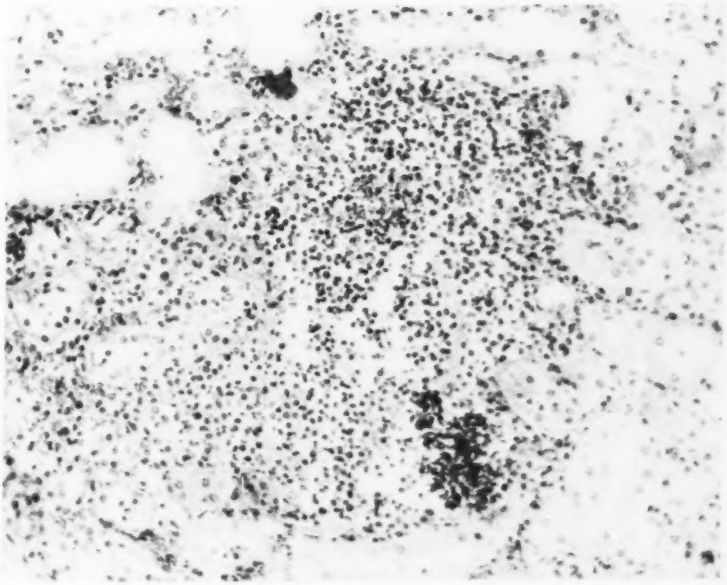

Figure 3. Abscess in kidney. (Hematoxylin-eosin stain, ×50)

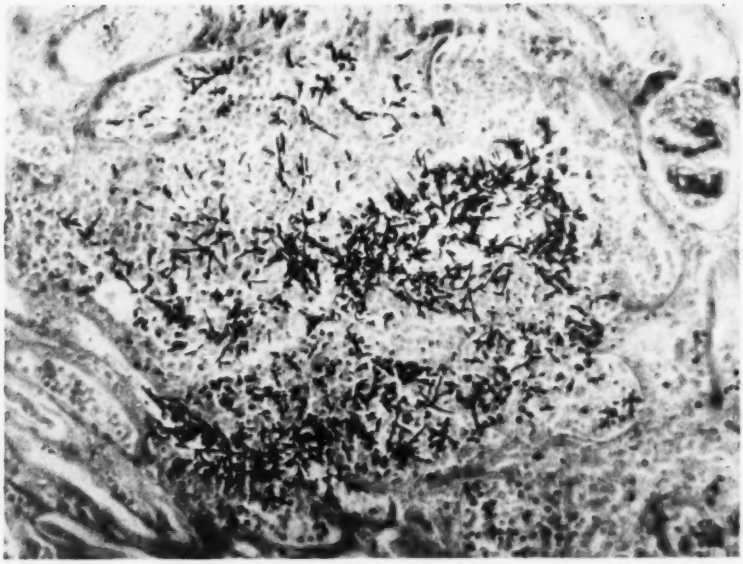

Figure 4. Renal abscess containing fungus. (Gomori stain, × 50)

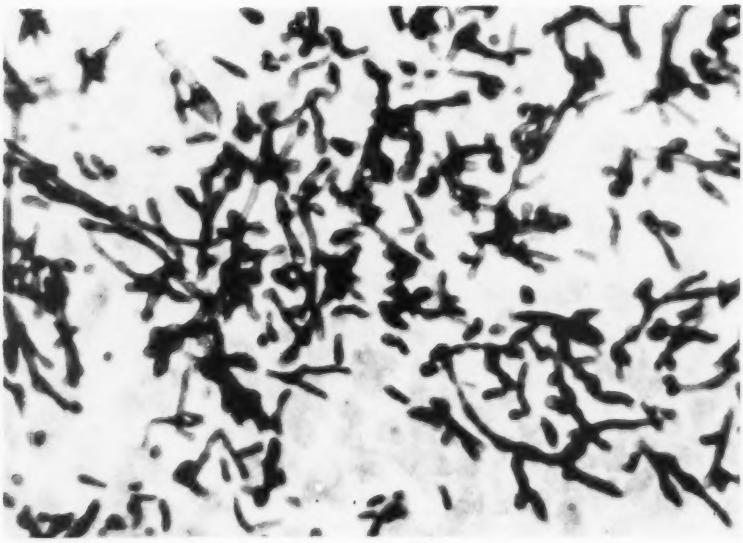

Figure 5. High-power view of fungus. (Gomori stain, × 215)

cents. The tubular epithelium showed necrosis and areas of calcification.

During the microscopic examination of the cerebral and renal abscesses in the hematoxylin and eosin preparations, chains of large organisms resembling hyphae were noted. Special stains showed gram-positive, yeastlike fungus forms, with both hyphae and spore forms present in large numbers in the abscesses (figs. 4 and 5). The organisms were identified as *Candida albicans*.

The findings of systemic moniliasis has been reported with increasing frequency over the past several years. The infection usually has been in cases of chronic debilitating illness, which was not the circumstance in this case. This child had been ill for only three weeks and at autopsy was still well nourished.

The use of broad-spectrum antibiotics has more recently been implicated in such cases and some have been shown to stimulate the growth of monilia in vitro. This is presumed to be the basis of this case. The child undoubtedly, as we have heard, originally had a respiratory infection with bronchopneumonia and otitis. Following the onset of the disease she received a total of six different antibiotics. It is presumed that the organism gained entry via the gastrointestinal tract which had probably been pretty well rid of its normal bacterial flora by the antibiotics.

I think that this well may be taken as a warning to us against the excessive use of combinations of antibiotics over any period of time.

Pathologic diagnoses:

1. Candida mycethemia with multiple renal, cerebral, and myocardial abscesses
2. Marked fatty degeneration of the liver

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"Ferrous sulfate ingested orally, though giving a black or tarry color to the stools, does not give a positive reaction with the gum guaiac test for occult blood.

The amount of blood contained in the stools of a patient who ingests an average portion of rare meat does not give a positive reaction to gum guaiac."

—JOHN COLLINS HARVEY, M. D.
in *American Journal of Medical Sciences*, p. 19, July 1956

SERVICE ARTICLES

RESUMPTION OF MILITARY DUTY AFTER TREATMENT FOR TUBERCULOSIS

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CARL W. TEMPEL, *Brigadier General, MC, USA*

PRIOR to the use of chemotherapy in the treatment of patients with pulmonary tuberculosis, relapse rates for those treated with bed rest were usually high. In a study of military patients with minimal tuberculosis inducted into service during World War II, Waring and Roper[1] showed that the relapse rates varied between 30 and 70 per cent, depending on the status of the disease and the type of military duty performed. In patients with more advanced tuberculosis the rate of "cure" or attainment of inactive disease was lower, and the breakdown rate in these patients was high even under sheltered conditions. This unfavorable prognosis made it difficult to return any patient treated for pulmonary tuberculosis to military duty in a reasonable period of time. Although, in the past, a few selected individuals with minimal tuberculosis and with pleural effusion had been treated in the military service and returned to duty, the usual practice had been to recommend permanent retirement for any individual found to have active tuberculosis.

The successful use of chemotherapy and operative procedures in the management of tuberculosis in the past decade reversed this trend and gave support to the contention that patients with tuberculosis might be treated and eventually returned to duty within the military service.[2] It has been the experience at this hospital that the relapse rate for military patients treated to the inactive stage of disease prior to discharge from the hospital was no higher than 5 per cent. It also was noted that in patients with new disease and with less advanced pulmonary tuberculosis, a recovery rate of 90 per cent or higher could be attained with the same low eventual relapse rate. The active tuberculosis case-finding program in the Armed Forces made such favorable results possible.

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Presented at the meeting of the Section on Military Medicine, Scientific Assembly of the American Medical Association, New York, N. Y., June 1957.

The policy of separating from service all personnel with tuberculosis resulted in the loss of well-qualified military manpower. In October 1949 the 81st Congress passed Public Law No. 341 which provided for temporary retirement of military personnel from the Armed Forces who were temporarily disqualified for active duty by disability. This law enabled the military services to retire the tuberculous patient to civilian life for a period of time up to five years. At the conclusion of this time, or at any intervening period, the individual could be returned to military service when found to be physically qualified. A number of military personnel were restored to an active-duty status by this means. However, it was noted that many well-motivated career officers and men who were temporarily retired to civilian life refused to re-enter military service on recovery and conclusion of temporary retirement. While on retirement many of these men found good jobs in civilian life which made it difficult for them to sever these connections and re-enter military service, although they were well motivated while in the service. This loss was most critical to the Armed Forces when highly trained specialists failed to return to active duty. The cost to the Government in training these individuals was high. It has been estimated, for example, that the cost of training a highly skilled pilot of military aircraft was at least several hundred thousand dollars, and of some enlisted specialists as high as 15 to 20 thousand dollars or more. This investment by the Government was completely lost if these individuals did not return to duty. These same men with specialty training are the ones who upon retirement were best able to get well-paying positions as civilians.

In view of the excellent results of treatment with low relapse rates, it was deemed possible to treat many military patients to a stage of inactive disease and return them to a duty status with only temporary limitations of physical activity. For this reason, in 1951 this hospital was authorized to return selected military patients directly to active duty. Initially only selected career personnel were returned to duty, particularly those showing a good response to treatment and with minimal residuals of tuberculosis. These trained specialists with definite value to the military service were given the option of a disability discharge or restoration to duty after an appropriate period of convalescent leave. It was considered necessary to give patients such a choice to make certain that every individual returning to duty sincerely wished to do so. Without motivation for service it would have been extremely difficult to evaluate the number of patients qualified to remain on active duty over a period of time, as the diagnosis of tuberculosis incurred in line of duty entitled them by law to Army retirement pay or compensation from the Veterans Administration when processed by a Physical Evaluation Board. These patients were returned to restricted duty under the limi-

tations provided by the Army physical profile regulations. The profile code number "P3" excluded strenuous physical exertion such as might be required in combat or field training. These patients were qualified for overseas duty however, and by and large performed the general type of duties required of other soldiers on all but the most arduous type of assignment. Through the period of years since 1950 good results were maintained and better results accomplished by surgical treatment and newer drugs administered over prolonged periods. The estimated tuberculosis relapse rate continued at about 5 per cent, and thus more patients were allowed to return to duty, including those who were admitted to the hospital with advanced tuberculous lesions.

RESULTS

Follow-up of tuberculosis patients returned to military duty since 1952 has been undertaken at this hospital. During the period of 1952-1955, 293 patients have been returned to duty; recent follow-up reports have been obtained on 281 (96 per cent) of these (table 1). Of the 281 patients followed, 233 (83 per cent) are still on active duty (table 2). Some of these have now been on duty 5 years, while those discharged to duty in 1955 have been on duty less than 2 years. During this same period of time 47 of the former

TABLE 1. *Patients treated for pulmonary tuberculosis and returned to active duty*

Year	Total number returned to duty	Lost to study		With follow-up data	
		Number	Per cent	Number	Per cent
Total	293*	12	4	281	96
1952	32	1		31	
1953	62	0		62	
1954	93	4		89	
1955	106	7		99	

*158 patients were returned to duty in 1956, increasing the present number in this category to 451 to date.

patients have been separated from the service, 41 of these for reasons other than physical disability. Eleven have shown worsening of their disease. One is on temporary retirement because of an apparent recurrence of active disease (table 3). Five patients have been retired permanently for physical disability; 3 of these for nontuberculous disability, 1 because of tuberculosis, and 1 for reasons unknown. Six of the relapses have occurred in patients discharged to duty in 1952; 1 of these patients received temporary retirement and is now back on duty status, 4 have been recommended for return to duty, and 1 is in the hospital being

treated for active tuberculosis. Of the six patients returned to duty in 1952 who suffered relapses only one received more than six months of chemotherapy. The recurrence of disease in a patient who was returned to duty in 1955 is actually a nontuberculous condition. This patient had a difficult course during the time of original hospitalization with both tuberculous and non-

TABLE 2. *Follow-up data on tuberculous patients who returned to duty*

Year	Total number followed	Still on duty		Relapse*		Separated from service	
		Number	Per cent	Number	Per cent	Number	Per cent
Total	281	233	83	11	4	47	17
1952	31	18		6		11	
1953	62	51		3		11	
1954	89	74		1		16	
1955	99	90		1		9	

*Some of those relapsed were also separated from service.

TABLE 3. *Type of separation from service of patients returned to duty after treatment of pulmonary tuberculosis*

Year	Number separated from service	Nondisability discharge	Permanent physical disability	Temporary physical disability
Total	47	41	5	1
1952	11	9	2	0
1953	11	9	2	0
1954	16	14	1	1
1955	9	9	0	0

tuberculous complications following surgical intervention. He was reoperated on for a bronchopleural cutaneous fistula which reopened while he was on a duty status. The lesion proved to to be due to a resistant staphylococcus, with no evidence of tuberculosis found at the time of the operation. Because of this patient's past history, however, he received another course of antituberculous drugs, and is now on convalescent leave prior to returning to duty again.

One hundred and fifty-eight patients were returned directly to duty in 1956, increasing the total number of individuals in this group to 451. The follow-up period of these patients has been too short for evaluation in this report. It is pertinent to point

out, however, that this figure reveals the current trend to restore more and more tuberculous patients to a duty status following successful treatment.

Those patients separated from the service for reasons other than disability are still being investigated to find out the actual cause for termination of duty. Most were separated for administrative reasons such as completion of 20 or 30 years of service or termination of term of enlistment. All patients being retired from the service after leaving this hospital are being investigated to find the actual cause of retirement. This has been completed in some, as mentioned above, but in a few instances the exact cause for physical separation is not known.

Of the patients placed on temporary retirement and discharged with inactive disease to their homes, or those transferred to the Veterans Administration for further treatment, most have made excellent recoveries. After a period of one or two years of inactive disease, most of these patients have been recommended for return to active duty, which drops them from the Army retirement rolls if restoration to service is not accepted by the patient. Of 1,900 who have been given temporary retirement from the military service, 1,532 have been recommended for return to duty, 339 are still on temporary retirement, and 29 have been given permanent retirement for tuberculous or nontuberculous conditions. The relapse rate in this group of temporarily retired servicemen is 2.3 per cent at this time (table 4).

TABLE 4. *Follow-up data on military patients temporarily retired for tuberculosis, 1950-1955*

	Total number	Duty recommended		Continue temporary retirement		Permanent retirement		Relapse*	
		Number	Per cent	Number	Per cent	Number	Per cent	Number	Per cent
Total	1900	1532	80.6	339	17.8	29	1.5	43	2.3
Pulmonary tuberculosis	1383	1069		292		22		39	2.8
Pleural effusion	384	361		19		4		1	0.3
Other tuberculosis	133	102		28		3		3	2.3

*Cases shown as relapses are also included under columns "continue temporary retirement" or "permanent retirement."

DISCUSSION

In view of the generally excellent results of treatment for tuberculosis with modern-day therapy and with the low relapse rate that has been evident in patients receiving adequate chemotherapy, it is our belief that it is not wise or economical to arbitrarily separate career-motivated military personnel from military service when diagnosed as tuberculous. Experience over a five-year period demonstrates that the return of these military personnel

to duty with only minimal restriction of their physical activities is entirely feasible. Retention of these individuals on active duty for periods in excess of two years has been accomplished in 83 per cent, with most of the remainder being separated from the service for administrative reasons. The rate of relapse of tuberculosis is extremely low—4 per cent in those followed to date. This demonstrates conclusively that the policy of returning the treated tuberculous patient to duty is practicable and that the danger of contagion to other military personnel is negligible. If these former patients are carefully and adequately followed a relapse is not necessarily a serious condition because in most instances it will be noted early, permitting successful retreatment of their disease and possible return to duty again.

Precise final data on results of this program will not be possible until a complete follow-up study of at least five years has been accomplished on all patients returned to duty, and until the exact disposition of those discharged from the service is determined. It is the policy at the present time to request that chest roentgenograms of all patients returned to duty be sent to this hospital once yearly for comparison with previous films. It is believed that if the patient is asymptomatic on a duty status and shows no change in the chest roentgenograms, this will give us the desired proof of good health and the best practical follow-up study for large numbers of individuals. In most of the former patients it will be possible to secure the results of bacteriologic studies which have been accomplished. In those patients on whom we have records indicating they are on a duty status (96 per cent with follow-up reports), we have received and reviewed chest roentgenograms on approximately one half at this time. This was initiated only recently and it is our intention to do this once yearly for five years of follow-up study.

Tuberculous patients, in general, have accepted their reassignment to duty after recovery in good faith and have taken overseas assignment without complaint. With the present program of increasing ambulation in the treatment of tuberculosis, it is anticipated that a higher percentage of our patients will be returned to duty in the future. The patients are being given part-time work during their hospitalization periods and everything is geared toward eventual return to duty. These patients should be better fitted for duty on their return to service, as the philosophy of successful rehabilitation is being advanced to them from the beginning of hospitalization. They are assured that they are still on a duty status and will go back to active duty as soon as possible, and that this is a temporary physical setback like a broken leg or any other temporary disability. This optimistic concept favors the continuance of a military career and reduces the desire for retirement for disability reasons.

SUMMARY AND CONCLUSIONS

A program of returning military patients to duty after treatment for tuberculosis included two groups of patients, the first being those restored directly to duty after treatment and the second group being those returned to active service after a period of temporary retirement.

During the period of 1952 through 1955, 293 personnel have been returned directly to duty after the successful treatment for tuberculosis. Of these, 233 are still performing military duty, as revealed in the 2- to 5-year follow-up study. The relapse rate in these patients has been extremely low. Of the 11 showing recurrence of the disease, 6 were discharged from the hospital in 1952. Forty-one patients have been separated from the service for other than physical disability reasons and five have been given permanent retirement.

The follow-up study of 1,900 military patients temporarily retired because of tuberculosis between the years 1950 to 1955 reveals that 81 per cent were found fit for duty after an average of 1 to 2 years of separation from service, and that only 2.3 per cent showed reactivation of the disease. Of the 1,383 patients treated for pulmonary tuberculosis, 39 (2.8 per cent) showed a worsening of their disease during the follow-up period.

In this day of highly technical armament, the medical services of the Armed Forces must make every effort to conserve skilled military personnel, including those recovering from tuberculosis. In this report it has been shown that 80 per cent or more of tuberculous patients discovered reasonably early by an active case-finding program can be rendered fit for return to military duty by modern-day treatment. These results support the contention that it is feasible to treat most of the well-motivated career military personnel to the stage of inactive disease and return them to useful service soon thereafter or following a short period of temporary retirement. The monetary savings to our Government by this program is very significant; but more important, members of the Armed Forces who develop tuberculosis in service can now almost certainly recover their health and live a normal life with little danger of recurrence of this chronic disabling disease.

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PSYCHIATRIC SCREENING OF COMBAT PILOTS: CORRECTION OF THE RECORD

SAUL B. SELLS, *Ph. D.*
DAVID K. TRITES, *Ph. D.*

THE PURPOSE of this article is to correct factual errors and erroneous conclusions in an article by Sparks and Niess[1] which appeared in the June 1956 issue of this *Journal*. That article cited data from an unpublished report of the present authors[2] which has since been published.[3] Inasmuch as the conclusions stated by Sparks and Niess are based principally on our data, which are incorrectly reported and interpreted, and as we had no opportunity prior to publication, to read their paper, it is necessary to set the record straight. Their article has already been cited by two other authors,[4,5] to our knowledge, who appear to have accepted their conclusions.

The particular conclusions and interpretations stated by Sparks and Niess, which are unsupported when the correct facts are used, are as follows.

1. That "psychiatric screening for combat duties, based on training level group psychologic test data and/or clinical appraisals as used in the project discussed here* appears as yet unable either to screen out the failures or to identify the successes in combat flying."

In their discussion of results, they stated: "The results seem to indicate that the psychologists at training level understood neither the nature of combat stress and its effect on personality nor the psychic variables which constitute probable success or failure. The fact that their estimates were in significant disagreement with the estimates of both combat peer-superiors and combat psychologists indicates that the hypotheses on which their predictions were made were *significantly*** in error. It is important to note also that the predictions were made in the *opposite direction.*"***

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*This refers to our report.[2,3]

**Italics added by authors.

These extreme statements are based on correlation coefficients reported in our paper. The error consists in that positive relationships were interpreted as negative, as a result of misinterpretation of the tables. For example, we reported a correlation of -.43 between psychologists' ratings of pilots made in the combat situation and psychologists' ratings of the same men in training. The combat scale, however, was oriented with high numbers representing superior adjustment and the training scale, in the opposite direction, with low numbers representing the positive end. Because of the reversed scaling of these two variables, a minus sign of the correlation coefficient denotes a positive relationship. It thus appears that the critics overlooked or misread the definitions of variables, which were included in the tables.

In support of the same conclusion Sparks and Niess[1] state, on page 813, with reference to the accuracy of training level prediction: "Interestingly enough, the top jet ace of the study (a double ace) was a predicted failure. The four failures*** were all predicted successes."

Although prediction of psychiatric failures in combat had been rejected as a primary goal of our research in favor of the broader concept of adaptability, principally because they are the result of stress in the situation as well as individual personality limitations,[6,7] the files for the ace and the four failures were checked for the ratings of their adjustment in training (no predictions of combat performance were made). No data were available for one of the failures, who had been included in the follow-up sample because he had taken an experimental test battery. Of the remaining four, the ace had been rated moderately well adjusted and two of the three failures, poorly adjusted. The fourth had made a satisfactory adjustment in training. Thus, the combat records correspond to training adjustment for three of the four men for whom data were available—not five misses, as reported.

The statistics quoted by Sparks and Niess reflect numerous errors with reference to numbers of cases on which various correlation coefficients were based. Their table 1 (p. 814) indicates that 14 coefficients reported were based on 65 cases, whereas the actual numbers ranged from 38 to 45 cases.

2. That psychologists in the combat zone, presumably because of better understanding, can predict combat adjustment accurately. Sparks and Niess state on page 814: "The fact that the combat psychologists' estimates agreed in general with peer-superiors' estimates indicates a most essential need for investigators in this area to have a *realistic* understanding of combat, *since training researchers tended to predict successes to fail and failures*

***This refers to 4, out of 111 pilots, located in the follow-up sample, who were found to be actual psychiatric failures in combat.

*to succeed. The results support the hypothesis that predictions of combat proficiency, based on psychiatric data adequately oriented to combat, can be made with sufficient precision to be of value in screening."*****

This claim represents a further misinterpretation of facts. After making correction of the minus signs, the correlation coefficient between psychologists' ratings in training and the mean of the ratings of pilots in combat by their fellow officers and superiors (peer-superior ratings) was 0.32 (significant at the 0.05 level) while that between ratings by psychologists in the combat zone and the mean peer-superior ratings in combat was 0.78. However, *only the training ratings could be treated as predictions* made independently of the combat peer-superior ratings. The ratings made by the psychologists in the combat zone were made with complete knowledge of the peer-superior ratings and differed from them only because additional data were taken into consideration. Under the circumstances, they cannot be compared as predictors with the training data.

The combat ratings were specifically designed to reflect as complete knowledge as possible of combat performance because they were being collected as criteria for the purpose of validating training ratings (used as intermediate criteria) and experimental screening tests. Captain Sparks was a member of the group sent to the combat zone for this purpose and collected these data in accordance with the above-mentioned procedure.

There is no evidence available in our study concerning the comparative skill in prediction of combat performance from the very early vantage point of the training situation and subsequent observation in the combat zone. Our data do present convincing evidence that prediction is feasible from early observation. The correlation of 0.78 is primarily of interest to demonstrate the consistency of our adaptability ratings in combat with the opinions of other pilots.

3. That certain personality types are suited to particular combat assignments. Sparks and Niess state, on page 815, that "some men with obsessive-compulsive personalities did very well in B-29's, but none were seen to do well in fighters; conversely, a number of those with 'psychopathic personalities' did splendidly in fighters but were not seen to do well in bombers."

Although this statement is not presented in quantitative terms, it may give support to individuals searching for an authoritative quotation to bolster a particular position. Our data, while not conclusive because of small numbers and the low magnitude of the relationships, tend to support the conclusion that well-adjust-

*****Italics added by authors.

ed, anxiety free, motivated, co-operative, and conforming individuals make the best military pilots. While there is much latitude for exceptions, scientific discipline requires that the general trends should be given weight while further study should be aimed at the exceptions.

In view of the importance of the issues discussed in this study, the reader is urged to read the complete published report.[3] It is our belief that every writer should be entitled to the free expression of his opinions. However, when factual data are presented in support of opinion, the accuracy and validity of these data are the measure of credibility.

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"WE" WHO HAVE TAPE WORMS

"The real editorial 'we'... refers to the annoying allusion to some nebulous and mysterious group of individuals in contact with the physician when clearly he is working alone and has the prime responsibility for the patient.... Could it be that a physician seeks to evade some responsibility for his patient through this device? Perhaps not but 'we' wonder. Would not it seem appropriate in talking with patients to use other devices; such as, 'It seems. It appears. I think. I believe.' Mark Twain has been quoted as having said in effect, 'The editorial 'we' traditionally and historically is reserved for the exclusive use of heads of state, editors and people with tape worms.' Anthelmintics—anyone?"

—R. COLEMAN LONGAN, Jr., M. D.
in *Virginia Medical Monthly*
p. 431, Sept. 1957

COMPARISON OF NAVAL OFFENDERS WITH NONOFFENDERS ON A PROJECTIVE SENTENCE COMPLETION TEST

BERNARD LOCKE, *Commander, MSC, USNR*

IN A PREVIOUS series of articles, the author and his colleagues[1-4] demonstrated that naval offenders present a far greater incidence of psychopathology than do nonoffenders. It is the purpose of this article to explore, through the use of a projective sentence completion test, some of the specific, dynamic areas in which offenders differ from nonoffenders.

Fifty prisoners at the Third Naval District Brig were given the Stein Sentence Completion Test.[5] They were asked to complete each sentence with a word or a phrase as rapidly as they could, as a test of how quickly they could think. With similar instructions, the same test was given to an equal number of men who were part of the transient population of the U. S. Naval Receiving Station, Brooklyn, N. Y., and who had no history of any naval disciplinary difficulties. The two groups were matched in regard to age, education, and length of service.

The completed tests were coded, mixed, and then presented in turn to three experienced clinical psychologists, who were asked to rate them in accordance with the instructions on the rating sheet (fig. 1). The judges were not advised as to the nature of the two populations, or even that two populations were represented in the 100 cases they were evaluating. After a preliminary pilot study, which showed no significant differences between the judges, their ratings were pooled. The results of these evaluations are presented in table 1.

It is seen that in every area the prisoner group scored higher—indicating greater disturbance—than did the control group. In five of the areas and in the general clinical impression, these differences were statistically significant. The greatest discrepancy lay in the prisoner's self-concept concerning his abilities. Here 21 of the prisoners were rated as "2," severely dis-

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From U. S. Naval Receiving Station, Brooklyn, N. Y. Dr. Locke is now at Veterans Administration Hospital, New York, 10, N. Y.

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Case No._____

INSTRUCTIONS: On the basis of your clinical judgment, taking to account such factors as inappropriate responses, dysphoric references and manifestations of conflict, rate the responses of the subject in the eleven categories listed below according to the following scale:

2- Severely disturbed. Subject appears to require therapeutic aid in handling emotional conflicts in this area.

1- Mildly disturbed. Subject appears able to handle emotional conflicts in this area without therapeutic aid.

0- No significant disturbances noted in this area.

X- Unknown. Insufficient evidence.

RATING:

_____1. Attitude toward family unit (parents, wife, siblings).
_____2. Attitude toward friends and acquaintances.
_____3. Attitude toward superiors.
_____4. Attitude toward inferiors.
_____5. Attitude toward peers.
_____6. Fears.
_____7. Guilt feelings.
_____8. Attitude toward own abilities.
_____9. Attitude toward past.
_____10. Attitude toward future.
_____11. Energy level.
General clinical impression? _____

Figure 1. Rating sheet for projective sentence completion test.

TABLE 1. *Comparison of mean scores of prisoner and control groups*

Element rated	Prisoners	Controls	D	D/PE diff
Attitude toward family unit	1.33	1.29	+.04	.11
Attitude toward friends and acquaintances	1.21	.92	+.29	1.71
Attitude toward superiors	1.50	1.38	+.12	.86
Attitude toward inferiors	.87	.48	+.39	3.00**
Attitude toward peers	1.19	.80	+.39	3.54**
Fears	1.36	1.29	+.07	.54
Guilt feelings	1.43	1.13	+.30	3.33**
Attitude toward own abilities	1.34	.91	+.43	3.58**
Attitude toward past	.84	.65	+.19	1.73
Attitude toward future	.96	.70	+.26	1.44
Energy level	1.18	.80	+.38	2.38*
General clinical impression	1.64	1.34	+.30	2.50*

**Significant at the .01 level of confidence.
*Significant at the .05 level of confidence.

turbed, as compared to 11 of the control group. Fifteen of the control group showed no evidence of any difficulty in this sphere, as compared to only 6 prisoners who rated a score of "0."

In addition to the apparent low regard that the prisoner had for himself, he also had considerable difficulty in his relationships with his peers and with his inferiors. Twenty of the prisoners received a score of "2" regarding their relationships with their peers, as compared to only 9 in the control group with a similar rating, indicating that the prisoner was more maladjusted in this sphere. Similarly, 13 of the prisoners were rated as being severely maladjusted in their relationships with their inferiors, as contrasted with 5 individuals in the control group who were so classed.

These findings can be interpreted as indicating that the popular concept of the offender as being a narcissistic, self-satisfied individual is far from correct. The prisoner's self-devaluation is borne out by his projection of his own feelings onto his peers and those he considers his inferiors, and by the extent to which his relationships with those he clearly considers his superiors are affected. Further evidence for this concept is presented by the fact that the prisoner group showed a much greater disturbance in the area of guilt feelings than did the nonprisoner group.

In considering the data presented in table 1, the question may be raised as to why it is that the control group scored high in at least four of the areas under consideration: attitude toward family unit, 1.29; attitude toward superiors, 1.38; fears, 1.29; and guilt feelings, 1.13, as well as in the general clinical impression 1.34. It is impossible to answer this question without adding a matched group from civilian life for comparative purposes. A logical hypothesis appears to be that since all the men who were tested had volunteered for duty in the Navy, it is possible that their difficulities with the family and authority figures, and the resultant guilt feelings, may have led them to attempt to escape from their difficulties in civil life through enlistment.

Following completion of the original ratings, the three judges were told the nature of the groups which they had rated, but not that the groups were equal in number. They then were asked to separate the test protocols of the prisoners from the nonprisoners. One judge was correct in 70 per cent of his choices, the second in 68 per cent, and the third in 60 per cent. Combining the three evaluations, we find that in about two thirds of the cases it is possible to differentiate the naval offender from the nonoffender.

SUMMARY AND CONCLUSIONS

Fifty brig inmates and a matched group of 50 men in nondisciplinary status were given the Stein Sentence Completion Test

in order to tap differences in areas of conflict. Blind evaluation of the test results made independently by three competent judges revealed that the prisoner group apparently was more maladjusted than the nonprisoner group in all areas studied, and showed that there were significant differences in attitude toward inferiors, in attitude toward peers, in guilt feelings, and in energy level. It is believed that the low esteem in which the average prisoner holds himself, and the resultant difficulties in interpersonal relationships, play an important part in the development of delinquent behavior in the Navy.

The data suggest the possibility, which should be evaluated, that men volunteer for military duty because of maladjustment in family relationships, difficulty with authority figures, and exaggerated feelings of guilt and fear.

It is possible for competent clincians to separate prisoners from nonprisoners on the basis of a sentence completion test, with considerably better than chance success.

ACKNOWLEDGMENT: The author wishes to express his thanks to Dr. Elias N. Abrams, Dr. Irving Handelsman, and Dr. Selig Rosenberg for their assistance as judges.

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"Recognition of combined AB and Rh hemolytic disease of the newborn is clinically important, inasmuch as transfusions of group A or B blood may aggravate the hemolytic process in such infants. Neutralized group O, Rh-negative blood is preferable for treatment of these patients."

—H. H. GUNSON, M. B., Ch.B.
in *American Journal of Clinical Pathology*, p. 40, Jan. 1957

Duplication of the Small Intestine

A Cause of Neonatal Intestinal Obstruction

PAUL A. THOMAS, *Captain, MC, USA*
KENNETH B. BONILLA, *Captain, MC, USA*
WARNER F. BOWERS, *Colonel, MC, USA*

DUPLICATION of the gastrointestinal tract is an infrequent entity, as judged from the number of recorded cases.[1,2] As an etiologic cause of intestinal obstruction in the newborn infant, this congenital anomaly is rarely encountered; the majority of cases are the result of atresia, stenosis, or malrotation.[3,4] For the treatment of a patient with neonatal intestinal obstruction requiring surgical correction, a specific etiologic diagnosis is desirable when such is obtainable. The presence of a palpable, freely movable, cystic abdominal mass at birth, with symptoms of intestinal obstruction, is presumptive evidence of a duplication of the bowel as the underlying cause. Two patients recently treated at this hospital illustrate the above combination of circumstances which led to a correct preoperative diagnostic impression. The second case is of further interest because of the associated volvulus of the duplication segment and complete 2-mm atresia encountered at the proximal base of the lesion.

Duplications of the alimentary tract have been described in the literature under a variety of names: enteric cyst, enterogenous cyst, ileum or jejunum duplex, and giant diverticulum.[1,5] These lesions have been reported to occur along the entire course of the alimentary tract from the tongue to the rectum.[5] This entity, however, has been most commonly observed in the small intestine.[1] Usually symptoms appear in infancy or childhood, although occasionally the lesion does not become symptomatic until later in adult life.[2,5] The symptoms most frequently observed are those of partial or complete intestinal obstruction. Rarely is the symptomatology of sufficient severity to attract attention in the first week of life. The youngest patient in the series reported by Ladd and Gross[5] was 2 weeks of age. In Kirtley and Matuska's[2] tabulation of all reported cases of enterogenous cyst of the duodenum, none was clinically evident with-

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in the first week of life. In a review of acute abdominal conditions occurring in infancy, Norris and Brayton[3] did not list duplication as a cause of intestinal obstruction. Wilson,[4] on the other hand, encountered three newborn infants with obstructing duplications in a series of 57 who were operated on for congenital abdominal lesions. In two instances a duplication of the small intestine was associated with volvulus about the involved segment. In one of these a proximal atresia was described, similar in nature to the pathologic findings of the second case herein reported.

CASE REPORTS

Case 1. This baby girl was born 29 April 1956 after an uncomplicated gestation and delivery. Physical examination at that time revealed a freely movable, cystic mass, 2.5 cm in diameter, palpable in the right lower abdomen. During the first several days of life, the infant had two dark-green stools. By the fourth day, however, persistent vomiting after each feeding was observed. Physical examination at this time confirmed the presence of an abdominal mass; the abdomen also was slightly distended and bowel sounds were high pitched. A roentgenogram of the abdomen (fig. 1) was consistent with early mechanical intestinal obstruction.

On the fifth day of life the infant was operated upon for an obstructing duplication cyst of the ileocecal valve (fig. 2). The lesion presented on the inferolateral aspect of the distal ileum and cecum, away from the mesentery. The cyst was incised to aspirate about 30 ml of clear yellow fluid and relieve the extrinsic pressure obstruction of the ileum. The cyst wall was then partially excised, leaving the contiguous wall along the ileum and cecum undisturbed. Postoperatively, the patient recovered without incident and when last seen at several months of age was doing well. Pathologically, the wall of the cyst, smooth muscle, was lined by colonic type mucosa.

Case 2. This baby boy was born 1 July 1957 after an uncomplicated gestation and delivery. Physical examination at that time revealed a 4- by 6-cm, freely movable, cystic mass palpable in the left lower abdomen. An unusually large amount (125 ml) of gastric content was aspirated by catheter. For several days the infant appeared to do well and two small, dark-green stools were passed. By the fourth day persistent gastric retention and vomiting were observed. Physical examination at this time confirmed the presence of an abdominal mass which transilluminated light. Bowel sounds were present but markedly decreased on auscultation. Deepening jaundice also was noted but considered physiologic. Microscopic examination of meconium did not show the presence of any desquamated cells or debris. A roentgenogram of the abdomen (fig. 3) was consistent with a mechanical intestinal obstruction. On the fourth day of life the infant was operated upon for an obstructing duplication of the jejunum (fig. 4). A volvulus

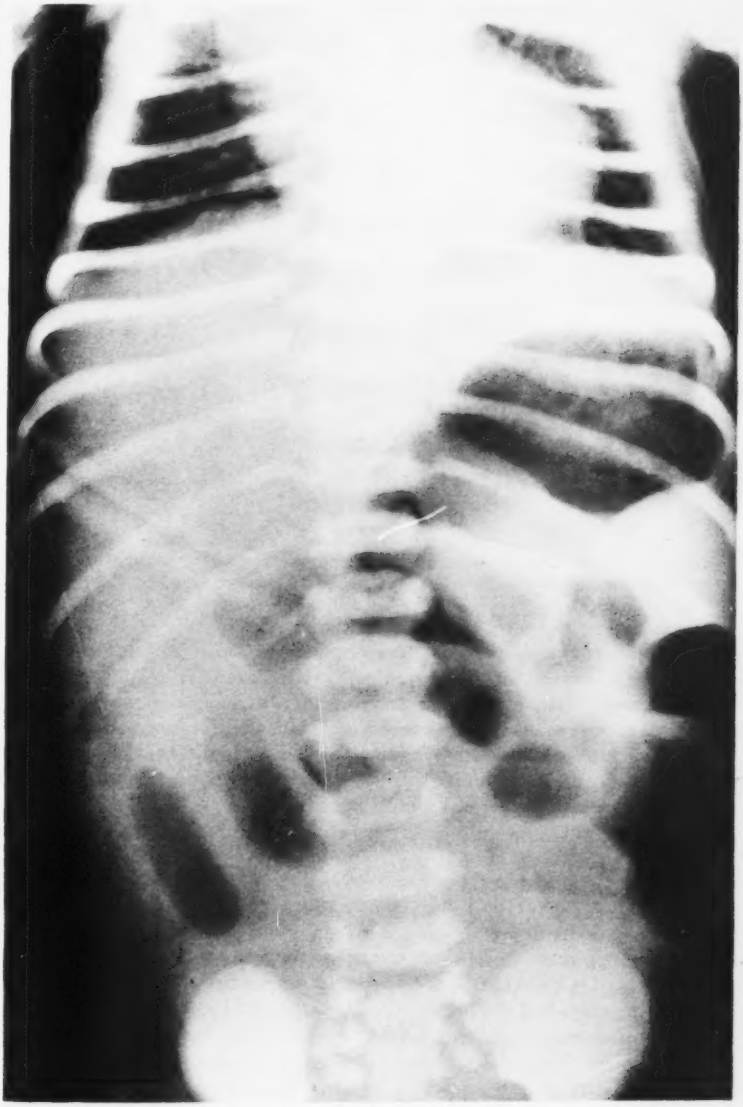

Figure 1 (case 1). Preoperative roentgenogram revealing moderate gaseous distension of the stomach and small intestine compatible with early intestinal obstruction.

Figure 2 (case 1). The exposed ileocecal region at operation. The duplication cyst is evident on the antimesenteric aspect with the appendix lying on the surface. The proximal ileum in moderately dilated.

of the involved segment was reduced and on further inspection a 2-mm fibrous atresia was observed at the proximal base of the pathologic segment. Resection of the jejunum, to include the duplication and atresic bowel, with end-to-end anastomosis was performed. The postoperative recovery was complicated by a superficial wound breakdown which was allowed to heal by secondary intention. The baby is presently doing well. Pathologically, the wall of the cyst, smooth muscle, was lined by small intestinal type mucosa.

DISCUSSION

The gross pathologic characteristics of these lesions have determined the various corrective surgical measures employed in the past. The intimate association of the smooth muscle wall of the contiguous normal channel with that of the enteric cyst makes simple enucleation extremely hazardous. Frequently the lesion is situated between the leaves of the mesentery, with the vascular supply to the normal bowel coursing over the cystic mass. This further complicates any attempt at enucleation. Therefore, the ideal surgical treatment is extirpation by resection of the involved segment and re-establishment of intestinal continuity by anastomosis. Where resection has not been technically feasible, marsupialization of the cyst, either into the gastrointestinal tract or to the exterior, has been accomplished with satisfactory results.

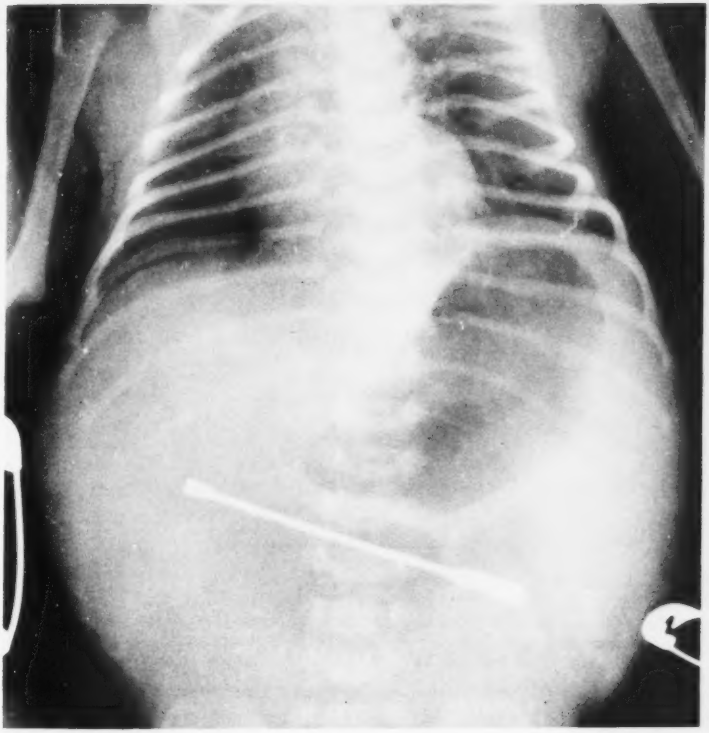

Figure 3 (case 2). Preoperative roentgenogram revealing moderate gaseous distension of the stomach, duodenum, and proximal jejunum compatible with complete intestinal obstruction.

The first case was unusual in that the duplication was antimesenteric and did not involve the blood supply to the normal bowel. Therefore, it was treated by partial excision of the duplication, leaving the area of contiguous attachment between the cyst and normal bowel undisturbed. The narrow strip of mucosa exposed to the peritoneal cavity was not cauterized or otherwise treated. This decision is justified on the basis that experimentally various intestinal segments have been isolated and turned inside out in the peritoneal cavity to absorb excessively produced fluid, as in ascites, without harmful effect.[6] This infant did well following surgery.

The second patient, on the other hand, exhibited the more characteristic finding of a duplication cyst presenting between the leaves of the mesentery. In this instance the mesentery was sufficiently redundant to allow a volvulus of the pathologic

Figure 4 (case 2). The exposed jejunum at operation. The duplication cyst is evident between the leaves of the mesentery with the blood vessels coursing over the surface. The collapsed jejunum is noted over the outer aspect of the cyst.

segment to occur. The presence of a concomitant atresia was interesting. In retrospect the high-level, complete intestinal obstruction was responsible for the unusually large volume of gastric aspirate obtained at birth.

SUMMARY

Two cases of duplication of the small intestine with signs and symptoms of intestinal obstruction within the first week of life are reported. The presence of a palpable, freely movable, cystic abdominal mass at birth is presumptive evidence of a duplication cyst of the gastrointestinal tract. The first case was unusual in that the ileocecal duplication presented on the antimesenteric aspect of the bowel. This circumstance is favorable for a simple, partial excision of the cyst wall without disturbing continuity of the normal intestinal tract. Such was the treatment in this patient. The second case was complicated by the surgical observation of volvulus of the involved segment as well as a concomitant atresia of the jejunum at the base of the duplication. In the majority of infants with gastrointestinal

duplication surgery may be deferred until a time of election; however, in the presence of intestinal obstruction, as observed in these two newborn infants, surgical correction becomes urgent.

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ARE YOU READY FOR SPACE TRAVEL?

Science fiction has provided us with extraordinary ideas about the physiology of space man, but in the United States many individual scientists, government agencies and private organizations are studying the problems which man will have to contend with if and when he leaves the earth for outer space or even tries to fly at very great heights and very great speeds.... It has been claimed by one physiologist that man will be ready for space travel as soon as space ships are ready, and that this will be sooner than most people suspect. This seems an over-optimistic view, but the investigations to determine whether it is possible are being carried out in the United States with increasing *tempo*.

—"Current Comment" Section
in *Medical Journal of Australia*
p. 329, Aug. 31, 1957

MEDICAL OFFICERS RECEIVE AWARDS AT ANNUAL MEETING OF MILITARY SURGEONS

Medical officers of the military services, shown on these pages, received the highest scientific awards at the 64th annual meeting of the Association of Military Surgeons held in Washington, D. C., 28-30 October under the presidency of Colonel Amos R. Koontz, MC, Maryland National Guard.

Shown above are most of the seventy-four officers from other countries who attended the meeting. Colonel Koontz is in the center of the first row. On his left is Major General Paul I. Robinson, MC, USA, Executive Director of the Dependents' Medical Care Program. Colonel George B. Green, USAF (MC) was chairman of the Foreign Liaison Committee.

Colonel Charles R. Mueller, MC, USA (retired), above, Director of Medical Service, Department of Medicine and Surgery, Veterans Administration, was installed as president of the Association at the close of the 1957 meeting.

Brigadier General Carl W. Tempel, MC, USA, left, Commanding Officer of Valley Forge Army Hospital, was the winner of the Stitt Award for meritorious achievement in the use of antibiotics in the treatment of tuberculosis. He was given the award by Dr. Jerome J. Van Gasse, General Manager of Pfizer Laboratories Division, Charles Pfizer & Co., Inc.

Assistant Secretary of Defense Dr. Frank B. Berry, right, was the moderator of a panel on "Medical Education in the Federal Services," which included Dr. John C. Nunemaker, Veterans Administration; Dr. James A. Shannon, Director, National Institutes of Health; Rear Admiral B. W. Hogan, Surgeon General of the Navy; Dr. Leroy E. Burney, Surgeon General of the Public Health Service; Major General Silas B. Hays, Surgeon General of the Army; Major General Dan C. Ogle, Surgeon General of the Air Force.

Colonel John P. Stapp, USAF (MC), right, is shown receiving the Gorgas Medal from Mr. Herbert W. Blades, President of Wyeth Laboratories, sponsor of the award. The medal was given for outstanding contributions to preventive medicine through deceleration studies.

Major General Paul I. Robinson, MC, USA, left, general chairman of the 64th annual meeting of the Association, receives the Founder's Medal from Colonel Koontz.

Captain William W. Ayres, MC, USN, Armed Forces Institute of Pathology, won the Sir Henry Wellcome Medal and Prize.

DR. DEARING NAMED HEALTH DIRECTOR IN OFFICE OF DEFENSE MOBILIZATION

Dr. W. Palmer Dearing, formerly Deputy Surgeon General of the U. S. Public Health Service, has been appointed to the newly created position of Assistant Director for Health in the Office of Defense Mobilization, Executive Office of the President, by Gordon Gray, Director of Defense Mobilization. Mr. Gray formerly was Secretary of the Army and later Assistant Secretary of Defense for international security affairs.

Doctor Dearing

Dr. Dearing, a *cum laude* graduate of Harvard Medical School in 1931, and of the Harvard School of Public Health, has been a Public Health Service career officer since 1934. He served as an epidemiologist in studies of poliomyelitis in California from 1934 to 1936, and tuberculosis from 1936 to 1941. In 1941 he was assigned to the Office of Civilian Defense as assistant, and subsequently, chief medical officer. In 1944 he was named personnel chief of the health division, United Nations Relief and Rehabilitation Administration. He returned to Public Health Service headquarters in 1945 as Deputy Chief of the Division of Public Health Methods and a year later was named Chief of the Division of Commissioned Officers, in which post he undertook a complete overhauling of policies for recruitment, training, and assignment of officers.

Named the Deputy Surgeon General of the Public Health Service in May 1948, Dr. Dearing was the third officer to hold that position since the creation of the position by the 76th Congress in 1939. He is a native of Palo, Iowa, but received his early schooling in California and Washington, graduating from Washington State College in 1927. He was a member of the founder's group of the American Board of Preventive Medicine, a fellow of the American Public Health Association, and a former member of the House of Delegates of the American Medical Association.

A MESSAGE FROM THE A. M. A.

In 1956 the Secretary of Defense gave active consideration to the elimination of the Veterinary Corps in the military departments. More recently, by administrative action on 1 October 1957, Secretary Wilson informed the Secretaries of the Army, Navy, and Air Force that inspection and grading services for Defense subsistence items of animal origin in the United States, Puerto Rico, and Hawaii were to be transferred to the Department of Agriculture as promptly as is mutually agreeable to the Secretary of the Army and the Secretary of Agriculture. Similarly, all laboratory work in connection with food-borne diseases and animal diseases is to be transferred to the Department of Agriculture.

With the transfer of inspection and grading services for subsistence items and laboratory work in connection with food-borne diseases and animal diseases, the Secretary of the Army was given 60 days in which to negotiate and approve an agreement with the Secretary of Agriculture for performance of these functions. In addition, the Army and Air Force are to develop plans and test the performance of depot, post, camp, and station inspection activities by the Department of Agriculture.

In support of the action, the Secretary of Defense indicated that it is in the over-all interest of the Government for his Department to utilize the extensive and specialized resources of the Department of Agriculture in the subsistence inspection area. At the time the directive was issued, the Department of Agriculture already was performing one third of the inspection functions for the Department of Defense. The Secretary said that his action would eliminate divided responsibility and centralize the entire function in the Department of Agriculture by transferring the remaining two thirds. It is estimated that such action will result in a saving of 100 officer spaces and 500 enlisted spaces.

Orderly and equitable disposition of veterinary personnel, under the terms of the directive, is to be made by release from active duty, transfer, or reassignment. Commissioning and activating reserve veterinary personnel after 1 October 1957 is not authorized except where necessary in the judgment of the Secretaries of the Army and Air Force to prevent inequities.

In a report to the Board of Trustees in May 1956, the Council on National Defense pointed out that the Congress legislated to

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From the Council on National Defense of the American Medical Association. The views and opinions expressed are not necessarily those of the Department of Defense. —*Editor.*

establish the Army Veterinary Corps in the National Defense Act of 3 June 1916 and reaffirmed its action in the Army Organization Act of 1950. Further, the United States Air Force recognized the military necessity for a veterinary service and administratively established a Veterinary Corps in 1949.

The Council recommended that the American Medical Association vigorously oppose any action by the Department of Defense that would reassign, discontinue, or obtain through contractual arrangement the various functions performed by the Army and Air Force Veterinary Corps. In recommending this action, the Council recognized that military veterinarians have made and continue to make valuable contributions to medical science of both military and civilian significance. Military veterinarians have played a vital role in successfully protecting military personnel from foodborne and animal diseases throughout two world wars and the Korean conflict, and have been responsible for inspection of food used by the Armed Forces.

The professional capabilities, military training, and centralized control of the Army and Air Force Veterinary Corps have established them as indispensable components of the over-all preventive medicine program and as important paramedical elements in the event of atomic disaster. The officers of this corps, trained and being trained in radiobiology, radiotoxicity, and radioassay as these pertain to foodstuffs and food-producing animals subjected to the effects of nuclear detonation, comprise a group whose technical knowledge and capabilities will be of inestimable value to both military and civilian populations in the event of atomic disaster. Such a group would be difficult of replacement.

Officers of the Army and Air Force Veterinary Corps, having been trained in the medical care of human casualties, should be relied upon to assist medical officers in the event of atomic disaster. The elimination of military veterinarians will substantially increase the Armed Forces requirements for medical officers to assume many of the functions performed by the veterinarians, thereby reducing the number of physicians available for the medical care of the civilian population.

For these reasons, the House of Delegates of the Association, in June 1956, voted to oppose the elimination of military veterinarians.

On 16 October 1957, the Association sent a letter to Secretary of Defense Neil H. McElroy outlining the action previously taken by the medical profession on this subject and requesting that in light of the responsibilities of the Secretary of Defense for the health of the personnel of the Armed Forces under their world-wide missions at world-wide bases he carefully reconsider the 1 October directive, which in effect abolishes the military Veterinary Corps.

OFFICERS CERTIFIED BY SPECIALTY BOARDS

Supplementary Listing

The following regular Medical Corps officers have been certified by the boards indicated since the listings published in previous issues of this *Journal* according to information from the Offices of the Surgeons General of the military medical services:

American Board of Orthopaedic Surgery

George N. Austin, Maj., USAF

American Board of Radiology

Deck E. Chandler, Lt. Comdr., USN
George C. Hamill, Capt., USAF
Glenn D. Moak, Capt., USAF
William N. Murray, Maj., USAF

American Board of Urology

Anthony A. Borski, Maj., USA

American Board of Internal Medicine

Nicholas F. Conte, Maj., USA
Michael P. Dacquisto, Maj., USA
Gerald I. Maas, Maj., USAF

American Board of Preventive Medicine

Aviation Medicine

Wilbur L. Kenoyer, Lt. Col., USAF
Zbigniew J. Baczewski, Lt. Col., USAF

DEATHS

BAKER, Maude Marie, Captain, AMSC, USAR, of Lake Charles, La.; stationed at the U. S. Army Medical Service Group, Ryukyu Islands; graduated in 1940 from Xavier University, New Orleans, La; commissioned a Second Lieutenant in the Army of the United States 11 March 1943, serving on active duty from 16 March 1943 until 16 February 1946; ordered to active duty 22 October 1950; died 10 September 1951, age 37, at Okinawa, Ryukyu Islands, of acute asthma.

REEVES, James Aul, Lieutenant, MC, USNR, of San Mateo, Calif.; stationed at the U. S. Naval Hospital, Oakland, Calif.; graduated in 1949 from the University of Southern California School of Medicine, Los Angeles, Calif.; served in an enlisted status from 24 November 1944 until 21 August 1946; appointed Lieutenant (junior grade), MC, USNR, 29 June 1949 and served from that date until his release to inactive duty 15 December 1952; ordered to active duty 6 July 1954; died 5 October 1957, age 32, at the U. S. Naval Hospital, Oakland, of pulmonary embolism.

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OFFICERS ATTEND PREVENTIVE MEDICINE CONFERENCE AT FORT CARSON, COLORADO

Speakers at a recent preventive medicine conference devoted to streptococcic infections at the U. S. Army Hospital, Fort Carson, Colo. included (left to right) Lt. Colonel Charles N. Moss, USAF (MC), Office of the Air Force Surgeon General; Lt. Colonel Herschel E. Griffin, MC, USA, Chief Communicable Diseases Branch, Office of the Army Surgeon General; Colonel James L. Murchison, MC, USA, Commanding Officer of the Fort Carson hospital, Captain John R. Seal, MC, USN, head of the Communicable Disease Control Branch, Office of the Navy Surgeon General, and Lt. Colonel Richard H. B. Dear, MC, USA, Post Surgeon, Fort Sheridan, Ill.

Sixty Army, Navy, and Air Force Medical Corps officers and civilian physicians attended the conference.

WALTER REED CARDIOLOGIST PROMOTED

General Mattingly.

Brigadier General Thomas W. Mattingly, MC, USA, chief of the department of medicine at Walter Reed Army Hospital, and consultant to the White House physician, was promoted on 1 November from the grade of colonel. General Mattingly is a native of Marbury, Md., and 1930 graduate of Georgetown University Medical School where he holds the appointment of clinical associate professor of medicine.

Fort Benning Hospital Inspected

Dr. Varner J. Johns, Jr., chairman of the department of medicine, College of Medical Evangelists, and Dr. Harold A. Zintel, director of surgery, St. Lukes Hospital, New York City, consultants to the education and training division of the Army Surgeon General's Office, recently visited the U. S. Army Hospital, Ft. Benning, Georgia, to review the intern training program established last summer. They also conducted a survey to determine if the residency program should be expanded to include other specialties in addition to training in general surgery which has been offered for the past six years. Colonel Robert B. Skinner is commanding officer of the hospital.

ERRATUM: On page 1541 of the October 1957 issue of this *Journal*, in the section entitled, "Officers Certified by Specialty Boards," the last three medical officers listed should have been shown as certified in "Occupational Medicine" rather than in "Founders Group in Occupational Medicine." The *Journal* regrets this error.—*Editor.*

PHONOGRAPH RECORDS AID TEACHING

The Indiana University School of Dentistry and the University of Pennsylvania School of Dentistry, for the first time in any dental school as far as it is known, are making available to their students and faculty a new technic in dental education. Outstanding clinicians of the country are brought to the classroom and library, where a "clinics on record" collection is established. These records are available to the practicing

Dr. Maynard K. Hine, Dean of Indiana University School of Dentistry, center; Dr. Ralph E. McDonald, Chairman of the Department of Dentistry for Children, seated; and Dr. Arthur Klein, a member of the children's department faculty, listening to Dr. McDonald's "clinic on record" in the library of the dental school.

dentist in his home through the medium of his phonograph. "Clinics on record" makes distance from clinical instruction centers no longer a barrier to learning new technics. Not intended to replace clinical participation but to supplement it, the method should prove helpful to many dentists who find it impossible to attend every clinic they should attend.

CORRESPONDENCE

Tuberculosis of the Liver

To the Editor:—In my opinion the abstract "Primary Miliary Tuberculosis of the Liver," on page 1,357 of the *U. S. Armed Forces Medical Journal* for September 1957, should not have been published. This is an abstract of an article by the same title by Terry and Gunnar published in the *Journal of the American Medical Association* of May 11, 1957. To any pathologist the concept of primary miliary tuberculosis of the liver is untenable. Terry and Gunnar in their original article freely admit that "'Primary tuberculosis of the liver' is inaccurate, because the condition is invariably secondary to tuberculosis elsewhere . . ." As a matter of fact, they devote half a page in the *J. A. M. A.* to an apology for, and an explanation of what they mean by the term. They admit that they use it for reasons of convenience. In my opinion their arguments in favor of the title are weak and indefensible. The abstract published in your Journal gives no inkling of this and therefore it is misleading.

JOHN H. SCHAEFER, *M. D.*
525 South Flower Street
Los Angeles 17, Calif.

The above letter from Doctor Schaefer was sent to Doctors Terry and Gunnar, who made the following comment:

To the Editor:—Although we are more interested in the diagnosis and cure of primary miliary tuberculosis of the liver than in its pathology or semantics, we sympathize with Doctor Schaefer's distress at our use of the words "primary" and "tuberculosis" in the title of our article; for he is a pathologist and to a pathologist (as to ourselves), primary tuberculosis can only mean one thing. We thought, however, that we had made it clear that "primary" referred to "miliary" rather than to tuberculosis, and that "primary miliary tuberculosis of the liver" was therefore justified. We should also like to point out that, no matter what name is used, it is necessary to recognize miliary tuberculosis confined to the liver as an important cause of fever of undetermined origin, which is readily diagnosed by needle biopsy of the liver and gratifyingly responsive to treatment with isonicotinic acid hydrazide;—but diagnosis and cure are both unlikely unless this rather occult situation is kept in mind.

R. BARRATT TERRY, *M. D.*
ROLF M. GUNNAR, *M. D.*
Cook County Hospital
Division of Medical Education
720 South Wolcott Street
Chicago 12, Ill.

Dental Water-Turbine Handpiece

To the Editor:—We have received a copy of the September 1957 edition of the *United States Armed Forces Medical Journal.* Please be advised that there is an error in the article by Commander Frank J. Brauer titled "Increasing Dental Speeds" starting on page 1291. On page 1292 under "Water-Turbine Handpieces" there appears a statement as follows: "A water-turbine (hydraulic) handpiece developed at the University of Michigan operates at about 60,000 r. p. m." The water-turbine (hydraulic) handpiece was developed by Dr. R. J. Nelsen, Mr. C. E. Pelander and Mr. J. W. Kumpula at the Dental Research Section, National Bureau of Standards and not at the University of Michigan as stated. Reference to the article cited by Commander Brauer will show that the handpiece developed at Michigan was air driven and not water driven. Your assistance in clarifying this matter will be appreciated.

JOHN W. STANFORD
Research Division
National Bureau of Standards
Washington 25, D. C.

Mr. Stanford's letter was referred to Commander Brauer, who replied as follows:

To the Editor:—I find that I erroneously listed the air-turbine handpiece developed at the University of Michigan as a water-turbine instrument. Proper due credit for the water-turbine instrument with the turbine in the head of the instrument belongs to the Research Section, National Bureau of Standards. Thank you for your kind attention to this matter.

FRANK J. BRAUER, *Commander, DC, USN*
U. S. Naval Station
Navy No. 27
c/o Postmaster, Seattle, Wash.

Dental Courses Announced

A five-day dentistry work shop will be conducted by the Sterling-Rock Falls Rehabilitation Center in Rock Falls, Ill., 26-30 January 1958, immediately preceding the mid-winter meeting of the Chicago Dental Society. The course will cover prosthetic restorations of the ear, nose, and parts of the face using both hard and flexible prostheses. During the month of August 1958 another course will be offered in the theory and technics of maxillofacial, surgical, orbital, and cleft palate care. Additional information may be obtained from Edwin N. Cooper, Executive Director, Sterling-Rock Falls Rehabilitation Center, 303 W. 2nd Street, Rock Falls, Ill.

Review of Recent Book

BRONCHOPULMONARY DISEASES, Basic Aspects, Diagnosis and Treatment, by 142 authors. Edited by *Emil A. Naclerio*, M. D.; foreword by *Richard H. Overholt*, M. D. 956 pages; 719 illustrations. Paul B. Hoeber, Inc., Medical Book Department of Harper & Brothers, New York, N. Y., 1957. Price $24.

Current concepts of bronchopulmonary diseases have appeared in medical journals of a specialized nature, but rarely has the total problem been clearly presented in such reports. Surgeons and internists have not been afforded reference material in a single volume which covers all the aspects of bronchopulmonary disease in a concise manner. Among the numerous authors participating in this volume, many have attained national reputation with their previous contributions to the medical literature. All of the material is presented in a clear and practical style, and in each section the reader is constantly aware of a background of extensive clinical experience.

Adequate space is allotted to fundamental anatomy and physiology of the lungs from the functional and pathologic standpoint. Diagnostic technics are discussed and evaluated in such a manner that they should be readily understood by the physician who is only occasionally faced with a bronchopulmonary problem. Specific disease entities are considered only in the light of present knowledge. Both medical and surgical facets of each disease are presented; proven methods of management are substantiated by statistically significant clinical experience. The importance of combined medical and surgical treatment is stressed in such diseases as tuberculosis and bronchiectasis. Actual minute details of surgical technic are minimized without detracting from the general value of the book. Physicians with extensive experience in bronchopulmonary diseases may differ with some of the opinions expressed in this book; however, they will appreciate the fact that finally a rather complete volume of the total knowledge of these diseases is available.

This first edition should be a valuable reference source for medical libraries and available to all internists and surgeons who participate in the treatment of pulmonary diseases. It is hoped that the editor and publisher will see fit to keep this book up-to-date with revisions as indicated.—*THOMAS H. HEWLETT, Lt. Col., MC, USA*

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